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The R. H. Fetherston Memorial Lecture.[1]

FŒTAL LOSSES IN CHILD-BIRTH.

By W. IVON HAYES,
Melbourne

IT is now more than forty years since I first met Richard Herbert Joseph Fetherston, the school doctor at Wesley College. In those days we often saw him astride an antiquated bicycle, and sometimes we watched him bustling noisily up the drive in his twin-cylinder De Dion roadster with the original registration number 25. A small man with bushy moustache and pointed beard, and wearing an old-fashioned Churchillian hat with straight-sided and flat-topped crown, he would then alight, and with a leisurely and peculiar gait which made it appear as though he was always just on the point of stopping, he would disappear through the front door. His leonine aspect awed us at first, but his highly pitched drawling voice, his sincerity, and his kindliness and interest completely reassured us, and firmly established him as a prime favourite. The Wesley crew worshipped him, and gladly suffered his medical examinations during their training, well knowing that auscultation of the heart, measurement of chest expansion, and micturition into test tubes were an important part of the ritual of winning boat races. One Saturday afternoon in 1912 I met him walking home in military uniform. He told me then of a war that would come, in which it would be necessary for everyone to play his part. Before long, Richard Fetherston was to become Director-General of Medical Services in the Australian Imperial Force during the war he had predicted, that of 1914-1918. For some years I lost sight of him, and then I was reminded of him again, this time in Dublin where he had done his medical course. Summoned to appear at an inquest on the body of an overlain baby—a very common catastrophe in that city—I formally gave my medical qualification and was astonished to see its effect on the City Coroner, Dr. Louis Byrne. However, his interest was not in me, but in his old friend Richard Fetherston. Did I know him? How was he? Would I be going back to Melbourne, and would I see him? All decorum ceased, and when the unfortunate child was at last remembered the case was closed with unbecoming brevity. Fetherston was delighted to hear of the incident and to have known that he was still remembered so far away, and after so many years. He was now giving up his appointment as gynæcologist to the Royal Melbourne Hospital; but, except that his beard was gone, he appeared just the same, he still wore the same style of hat, and he still drove a De Dion car, though a later model, with the same number 25. I saw him occasionally, and one day in 1943 chatted with him about the early days of the Women's Hospital in which he had, in truth, a life-long interest, having been born there in 1864. He promised to send me photographs of some of the former "honoraries" for preservation at the hospital, and then we parted. That evening he posted the photographs, and the following morning we learnt that he had died in his sleep. And so passed on the man who had been so much in his long life—a beloved physician, a capable gynæcologist, a member of the Victorian State Parliament, the generous and self-effacing leader of the Australian Army Medical Corps, a valued counsellor in the British Medical Association, and an unassuming and sincere man whose friendship was readily attained and held. Richard Fetherston, whose memory we honour tonight, was one of those leaders of the last generation who through their teaching and example have had a profound influence on us in whom they still live.

Fetherston spent twenty-two years as honorary surgeon at the Women's Hospital before leaving that post in 1914 to become the first gynæcologist to the Melbourne Hospital. Since his time at the Women's Hospital there has been a

[1] Delivered at a meeting of the Victorian Branch of the British Medical Association on November 27, 1948, at Ballarat.

period of remarkable development in obstetrics, so that it is almost impossible for us to understand and appreciate the handicaps and deficiencies which men of his day suffered. From the beginning of this century so many notable discoveries have been made, not only in obstetrics but in all fields of medical science, that one is surprised at the amount of good work that was done by the obstetrician thirty or forty years ago with little else than his bare hands and the forceps. In 1895 J. W. Ballantyne was advocating that women should be cared for during pregnancy, and out of this slowly grew our modern system of ante-natal supervision, in which the mother's good health is the first consideration, and any abnormality which may arise is promptly treated while still in an early stage. But many years elapsed before this practice became universal, and it was not until 1920 that the Women's

TABLE I.
Women's Hospital, Melbourne.

Causes of Maternal Deaths.	1913–1918. 7,771 Deliveries (Unbooked Patients Only); 120 Maternal Deaths (1·54%).	1943–1948. 18,297 Deliveries (Booked Patients Only); 33 Maternal Deaths (0·18%).
Toxæmia	52	10
Sepsis	25	2
Hæmorrhage	16	4
Others	27	17

Hospital established its first ante-natal clinic. In Eden's "Manual of Midwifery" (1911) there is no mention of ante-natal care, and we read that "clinical evidence has recently been adduced which appears to indicate that a definite rise in blood pressure precedes the occurrence of (eclamptic) fits". The sphygmomanometer was about to be introduced. In 1900 Karl Landsteiner discovered the main blood groups; but even in the first World War blood transfusion was infrequent, while in civilian life it was seldom used. It took a second World War to make blood transfusion a commonplace. The menace of puerperal

TABLE II.
Commonwealth of Australia.

	1916.	1945.
Total births	131,426	160,560
Deaths under one week ..	2,944 (22·4%)	2,962 (18·45%)
Deaths, one month to one year	5,079 (38·65%)	1,222 (7·62%)

sepsis hung over every parturient woman and over every obstetrician, and the young practitioner who was so unfortunate as to lose a mother from infection would often find that his midwifery practice had vanished. Today puerperal sepis has been relegated to a minor role as a cause of death, because of the study of the bacteria concerned and the modes of infection, better aseptic and antiseptic technique, and the introduction of the miraculous life-saving chemotherapeutic agents. Difficult labour due to minor degrees of disproportion, when the child is just a little too big to pass safely through the mother's pelvis, had always been a nightmare to the obstetrician, and before 1920 most of these cases ended disastrously for the mother or child; it was then that FitzGibbon of Dublin gave us the conception of "trial" labour. The woman is allowed to begin labour naturally, and definite critera are used to enable us to recognize whether normal progress is being made. If certain signs show that descent is being prevented by disproportion, delivery is completed by Cæsarean section before the mother and child have been injured by pressure, exhaustion or infection. This simple and, to us, obvious solution to the problem depends for its success on the use of the modern low type of operation introduced in 1908 by Munro Kerr of Glasgow, and later made popular by DeLee of Chicago in the twenties. These major achievements and many other refinements have so changed obstetrics that we cannot fairly compare the results obtained today with those of thirty years ago, except that such a comparison illustrates the vast advantages we now enjoy. Australian statistics of maternal mortality are unsatisfactory, so the records of the Women's Hospital for the two five-yearly periods 1913 to 1918 and 1943 to 1948 have been examined (Table I). These show an amazing reduction in the number of maternal deaths, especially those from hæmorrhage and sepsis; but still further improvement is possible when at present one-third of the deaths are caused by toxæmia and one-half are brought about by conditions such as myocarditis, pulmonary tuberculosis and pulmonary embolus.

TABLE III.
Commonwealth of Australia: 1936 to 1945.

Deaths under One Week.	Estimated Still-Births.	Total.
27,323	40,984	68,307

The fœtal death rate comprising still-births and neonatal deaths is another and probably a more delicate criterion than the maternal mortality for assessing the quality of obstetric work, and this also shows progress, but to much less extent. The Commonwealth Statist does not yet publish any record of still-births, but a comparison of the neonatal deaths (within one week of birth) which occurred in Australia in 1916 and 1945 shows that after thirty years the obstetrician saves only four more children in every thousand born, while in contrast the pædiatrician during the same period rescues an extra 31 between the ages of one month and one year (Table II). During the decade 1936 to 1945 27,000 children died within one week of birth, and if we add the still-births (estimated at 50% more than the neonatal deaths), we obtain a total of 68,000 lives lost to the Commonwealth during those ten years (Table III). Whatever view we may hold on the necessity or the

TABLE IV.
Women's Hospital, Melbourne.

Period.	Number of Births.	Still-Births per Thousand.	Neonatal Deaths per Thousand.	Total per Thousand.
1913–1918 ..	7,878	63·5	48·0	115·5
1943–1948—				
Booked patients	18,477	24·1	15·3	39·4
Unbooked patients ..	3,553	104·1	68·7	172·8
Total	22,030	37·0	23·9	60·9

desirability of increased population, we must regard this loss of life as obstetrical in origin and therefore as a direct challenge to us as medical practitioners.

At the Women's Hospital there has been a general reduction of 50% in fœtal losses over the last thirty years; but amongst the ante-natal or booked patients the fœtal death rate is now only 39 per thousand, or about one-third of that which was current before ante-natal care was introduced (Table IV). Unbooked or emergency patients amounting to 600 each year are admitted from outside sources because of serious complications, and these naturally swell the overall hospital rate and should be considered separately.

The fœtal death rate among children born at the large intermediate hospitals in Melbourne is commendably low, being below 31 per thousand (Table V). This is probably the result of a number of factors. The mothers are usually in good health because of their higher economic status,

they choose well experienced practitioners to attend them, and the nursing of the mothers and babies is excellent.

Since 1929 the Bush Nursing Association has delivered over 41,000 patients with a fœtal loss of under 32 per thousand; but as a small number of patients are transferred to other hospitals because of complications, this figure perhaps should be increased. Even then it indicates that the work of this organization is of a very high order, and it suggests that other factors such as diet, exercise, mode of life and mental outlook may be concerned with the problem of fœtal mortality.

TABLE V.
Period 1943 to 1948.

Place.	Number of Births.	Still-Births per Thousand.	Neonatal Deaths per Thousand.	Total per Thousand.
Australia	160,560	27·67 (Estimated)	18·45	46·12
Women's Hospital Melbourne (booked patients)	18,477	24·13	15·26	39·39
Six intermediate hospitals ..	17,326	17·72	12·98	30·70
Bush Nursing Association ..	41,898	19·0	12·5	31·5

Fœtal deaths are classified into still-births and neo-natal deaths; but with the exception of those due to prematurity, this is quite arbitrary, as almost all are the result of some lethal accident arising late in pregnancy or during labour. The child either dies before birth or is already dying when born. At the Women's Hospital the commonest causes of fœtal death are asphyxia, cerebral hæmorrhage, prematurity and atelectasis (Table VI). Viewing the ætiology from a different aspect, we find that almost half the deaths follow toxæmia in the mother for which surgical induction of labour is required, ante-partum hæmorrhage, breech

TABLE VI.
Women's Hospital: 1943 to 1948.

Still-Births (816). Neonatal Deaths (526).		Neonatal Deaths (526).	
Cause.	Number.	Cause.	Number.
Asphyxia	380	Prematurity	162
Maceration	217	Atelectasis	130
Cerebral hæmorrhage ..	106	Cerebral hæmorrhage	88
Prematurity	30	Infections	60

delivery and difficult labour needing the use of forceps (Table VII). Each of these is attended by a very high fœtal mortality rate.

The problems of fœtal death are concerned with the minutiæ of obstetrics, and now that the major maternal hazards have been successfully attacked, the perils to the child must be appreciated and reduced. Much may be done to prevent toxæmia, to combat prematurity, to reduce asphyxia and anoxia, and to lessen birth injuries; but speedy and dramatic results cannot be expected.

Until now it has been commonly believed that we could not prevent toxæmia or the onset of premature labour, because we did not know their cause; we have therefore been content to consider them inevitable and treat them when they arose. Lately, however, accumulating evidence is showing that a great deal can be done to avoid or defer these two serious complications. Women must be taught to realize that pregnancy is not merely an incident in their lives, but one of the sternest physical ordeals they will encounter, and poor physical condition, overweight and lack of adequate nourishment are handicaps which may jeopardize life and health—not only their own, but also those of their children. It is essential that the pregnant patient takes a diet rich in protein and adequate amounts of vitamins and minerals, with the exception of sodium which should be limited. All patients should be weighed regularly during pregnancy, this being even more important in the normal case than estimation of blood pressure or examination of the urine, since an abnormal increase in weight usually precedes other signs of toxæmia. In addition the patient's increase in weight must be rigidly controlled. Opinions differ on the optimum amount, but a satisfactory and easily remembered rule is "nothing for the first three months, and not more than three pounds during each of the remaining seven lunar months"—a total of 21 pounds or one and a half stone for the whole period. Patients who are initially overweight and those with a history of toxæmia should be even more severely restricted, while those who are grossly underweight may be given more latitude. The majority of patients, with a few exceptions which can be explained, lose about 21 pounds during labour and the puerperium, and if their increase during pregnancy has been this amount, they will revert to their pre-pregnancy weight. Patients who exceed the weight allowance often present a definite syndrome. They become gross and inert, their faces are bloated and coarsened, their expression is listless, they complain of a multitude of minor discomforts such as indigestion, constipation, neuritic pains,

TABLE VII.
Women's Hospital, 1943 to 1948: a Total of 1,342 Fœtal Deaths.

Complication or Procedure.	Number of Cases.	Number of Fœtal Deaths.	Percentage.	Remarks.
Surgical induction of labour for toxæmia of pregnancy ..	845	135	16	
Accidental hæmorrhage	259	101	39	
Breech delivery ..	599	163	27	Two-thirds of the infants were premature.
Forceps delivery ..	2,500	184	7	Half the babies suffered from asphyxia, one-third from cerebral hæmorrhage.
Placenta prævia ..	207	66	32	

insomnia, headaches, irritability and a general feeling of ill-being. To those who repent and adopt the proper regimen comes a transformation from a burdened, unhealthy woman to an eager expectant mother. Numerous investigations have shown that correct nutrition and the regulation of weight during pregnancy considerably lessen the incidence of both toxæmia and prematurity, and the experiment of Luikart[1] is typical. He treated 1000 normal pregnant patients with a protein rich, low caloric diet, restricting the total weight gain to 16 pounds. No patient had a blood pressure greater than 145 millimetres of mercury (systolic) and 85 millimetres (diastolic), no case of toxæmia, preeclampsia or eclampsia occurred, and no mother died. No large babies were born, and the fœtal mortality rate was one-sixth of that in the uncontrolled group. It should, therefore, be mandatory for all doctors to treat their pregnant patients in accordance with these modern views.

The causes of fœtal asphyxia and anoxia are many and varied, and depend on the course and conduct of the labour and delivery. This question will be considered later; but here must be mentioned the necessity for correcting any anæmia in the mother during pregnancy and labour, and for the administration of oxygen to the patient in a long or difficult labour, when the fœtal heart rate becomes irregular or slow. The effect of prolonged anæsthesia, sedative drugs and cerebral anoxia on the child's respiratory centre is well known, but is often ignored or forgotten when an otherwise unaccountable death occurs.

The number of fœtal deaths from asphyxia and birth injury varies with the knowledge, judgement and manual

dexterity of the obstetrician. But experience can come only from opportunity, and in thinking of the facilities for learning that are available to the young doctor one is astonished at their paucity. The under-graduate is well taught, but his experience is strictly limited during the ten weeks he spends at the Women's Hospital, and he cannot help but view obstetrics from the standpoint of an examinee. Later, on graduation, he will follow the usual practice and spend at least one year at a general hospital, where he will assume responsibility and gain practical knowledge of the treatment of medical and surgical patients. He thus fits himself for general practice, which as a rule he then enters, but he begins that work with less obstetric skill and ability than when he left the Women's Hospital as a student. Is it any wonder that he fears the difficulties, and even worse, cannot properly appreciate the many problems he is likely to meet before he acquires competence? The Women's Hospital and the Queen Victoria Hospital together train about 12 recent graduates each year, but the remainder have to teach themselves without guidance, help or sympathy. Can anything be done for these? To me it has always seemed remarkable that the large intermediate hospitals in Melbourne have not felt the need of a resident medical officer. Their beds range in number from 40 to 200, four taking more than 100 patients. Seven have obstetric beds which enable them to accommodate from 550 to 1250 maternity patients each year. In case of emergency the patient's doctor, who may live some distance away, has to be summoned while the nursing staff do what they can. If the doctor cannot be found or if he is engaged elsewhere there is still further delay. Surely a doctor who has completed one or more years as a resident at a public hospital would be of incalculable value to the patients, the doctors, and the nursing staff, and would be accepted by all as a necessary adjunct to the hospital. I would regard such a resident medical officer as being interested mainly in the obstetric department; he would see a great deal of the work and be instructed in watching patients in labour, he would aid in the delivery or actually deliver patients under the eye and with the help of the doctor in charge, and in a short time he would acquire a liberal and sufficient education in the art and practice of obstetrics. These internships, even if only of three months' duration, would enable another 30 recent graduates to obtain an opportunity of filling a large and serious gap in their education before embarking on a career in general practice.

The nursing profession today has ceased to attract young women, because it cannot compete with other vocations in which the remuneration is high and the preparatory training brief, and the time is not far distant when there will not be sufficient nurses to care for the sick in the community. This trend has existed for some time, and its effect is now apparent, many hospital beds in the metropolitan area being vacant because of the shortage in nursing staff. Obstetrically trained nurses who are willing to do midwifery are also becoming fewer, and the position is steadily growing worse. Shorter hours, higher pay and more social amenities will help; but something more radical is required. The *Midwives Act* insists that women in their confinement be nursed only by those who have completed nine months' special training and performed 20 deliveries. This may have been necessary in days gone by, when many nurses took complete charge of maternity patients, either as visiting nurses or in their own hospitals; but times have changed, and the modern midwife acts as the doctor's assistant and under his direction. A very short course of instruction at a public obstetric hospital would be sufficient to teach a nurse these duties. It is therefore suggested that every general trained nurse should receive three months' tuition and experience in obstetric work as part of her training, and then receive registration as a general and obstetric trained nurse. This would have many advantages: it would at once increase the number of midwives. It would obliterate the slight difference in status which sometimes seems to exist between the general nurse and the midwife, and it would enable and encourage nurses to do sometimes one variety of work and sometimes the other. For those who demand a more thorough and comprehensive training to enable them to fit themselves for a position of matron, labour ward sister or charge sister, intensive training for one year at a large public obstetric hospital with opportunities for responsibility, experience and teaching would be required. Two grades of midwives would then exist, and a system similar to that in England would come into being. Whether such a scheme is introduced or not, let us hope that the Commonwealth Government will take over the registration of nurses and midwives so that State borders will cease to exist and interstate jealousies and parochial powers be abolished, for at the present time any State may veto any change in the midwives' regulations of another State by refusing reciprocity.

The care of the new-born child and especially of the premature infant has rightly passed from the obstetrician to the pædiatrician, and we can soon expect that special hospital units will be set up to which premature and sick infants will be sent and treated by specialist doctors and nurses. These units could easily be established in Melbourne and country base hospitals, and many premature and delicate babies, who would otherwise die, might be saved. The transport of these little patients may prove difficult; but a simple method could be devised to make this safe, and even a slight risk would be more than offset by the advantages they would enjoy by being cared for in a special unit. Soon we may also expect a bank of expressed breast milk similar to the blood bank we know.

Conclusion.

In the last Fetherston Memorial Lecture, Dr. Arthur Wilson advocated the establishment of an obstetric committee whose duty would be the investigation of maternal and fœtal deaths, the compilation of obstetric statistics, the organization of consultant and transfusion services, and the distribution of helpful information. When he spoke, he had the metropolitan area in mind; but his suggestion applies equally to large provincial centres. In Melbourne, discussions have taken place from time to time, but have been abortive because of lack of sufficient interest and of failure to appreciate the value of such a body. Yet in other countries, notably the United States, these committees have been in existence for many years and have become an essential part of obstetric practice.

The compilation and publishing of statistics have invariably been followed by a diminishing death rate, because this record shows the results attained by various methods of treatment and indicates the best procedures and what aspects need special study. For this reason the inclusion of still-births by the Commonwealth Statist would be welcome; but we ourselves should investigate the general incidence of toxæmia, eclampsia and Cæsarean section, and the fœtal losses associated with these conditions. How often do the varieties of erythroblastosis occur in the community, and what sequelæ may develop in those children who ultimately survive? Have any abnormal states in pregnancy a geographical, social or economic distribution, and if so, what is the explanation? How many patients are in mental hospitals because of brain injury received at birth, and could this have been avoided? The original discovery by Gregg of Sydney of the effect of maternal rubella on the fœtus has opened up another wide field for research, and has reminded us of the work of Stockard performed more than thirty years ago. Stockard, using fish ova, showed that certain deformities could be produced by temporarily altering the environment of the fœtus at definite fixed moments in development. Does this ever occur in the human? These are a few of the many problems which await solution.

We have travelled a long way and achieved much, but a great task still confronts us. We must not allow ourselves to become complacent, but must press on until we have substantially reduced the present fœtal losses associated with child-birth.

Reference.

(1) R. Luikart: "High Protein, Low Caloric Diet for Prevention of Toxemia of Pregnancy", *American Journal of Obstetrics and Gynecology*, Volume LII, 1946, page 428.

EPIDEMIOLOGY OF RHEUMATIC FEVER AND SOME OF ITS PUBLIC HEALTH ASPECTS.[1]

By CYRIL FORTUNE, M.D.,
Perth.

IN recent years by careful surveys over long periods considerable progress has been made in elucidating many new factors associated with the epidemiology of rheumatic fever.

In 1930, Coburn pointed out that there was an intimate relationship between the presence of β-hæmolytic streptococci in the respiratory tract and the onset of rheumatic fever.

Later Kuttner, of New York, and Duckett Jones, of Boston, have stressed this fact, and now the majority of workers agree that the initial attack of rheumatic fever and subsequent recurrences are associated with hæmolytic streptococcal infection.

During the war, great efforts were made to identify a particular strain of group A hæmolytic streptococcus as a causal agent, but different workers found different strains.

In Camp Borden, Canada, Feasby found that the commonest epidemic strain (A19) was most frequently associated with involvement of joints, that 4% of men with streptococcal disease of the respiratory tract acquired polyarthritis and that 24% had cardiac complications.

In 1939 in the United States of America in a rheumatic hospital, type A17 caused 47 recurrences with 22 deaths; in 30 cases there was clear-cut evidence of hæmolytic streptococcal infection, and in 16 cases, although there was no complaint of acute throat infection, streptococci appeared in the throat two weeks before the onset of rheumatic fever.

The American workers have carried out immunological studies with respect to the antibody response of the rheumatic patient to streptolysin, an exogenous toxin of the streptococcus. It must be stated that the general opinion is that there is no specific response of the rheumatic patient different from that of the normal patient, and electrophoretic protein patterns in the rheumatic person show no demonstrable difference in the immunological response from normal. No one yet has been able to label one of the many types of pathogenic streptococci as the epidemic strain responsible for rheumatic fever.

In the recent war it was noted particularly in the Canadian and American armies that the features known about the incidence of rheumatic fever and its association with streptococci were reenacted and found to be the same. Rheumatic fever occurred fourteen times more frequently if there was a previous history of rheumatic fever, and 39% of those who had had rheumatic fever developed it again, but fortunately quite mildly.

It was interesting to note that for every one frank case of rheumatic fever there were ten to fifteen men with much the same type of symptoms, but not ill enough to go to hospital, and so the sick ward only collected about half of the cases.

It will be a huge task to type specifically the streptococcus found to be predominant and pathogenic to every rheumatic patient, and as the immune bodies are essentially the same in all streptococcal infections one must be prepared to suppose that there are other factors.

Some believe that no patients develop rheumatic fever without streptococcal infection, and, of course, we have evidence from Barclay and Lewis that in 501 patient-seasons with "sulpha" treatment there were only 1·2% of relapses, whereas in 505 patient-seasons with no treatment there were 19·8% of relapses.

Duckett Jones does not altogether agree with this and quotes an experience in 1943, when, without any evidence of fresh streptococcal infection whatsoever in his group of 53 patients, several of his patients developed cardiac failure quite suddenly, several had chorea, and in two cases in which the condition appeared to be quiescent the liver was found to be enlarged and right heart failure imminent. This group of patients had recrudescences without obvious signs of increase of streptococci in the respiratory tract.

There has been a considerable amount of work carried out in surveys in families, for many believe quite firmly that there is an hereditary susceptibility underlying the familial incidence of the disease, the postulated mechanism being due to a single autosomal and recessive gene.

In families in which the parents had a history of rheumatic fever the secondary attack rates were higher than in families in which the parents had no such history. This observation would suggest that environment plays a secondary role in familial incidence.

Wilson states that recurrences of rheumatic activity probably represent recrudescence of existing disease rather than new infection, that although some of the facts collected are consistent with contagion, on the whole the evidence is not conclusive.

Ryle puts the argument very well: "Specific liability as well as specific infection must be accorded fair consideration."

It is known that prevalence is greater in urban populations in temperate zones and locations with wide fluctuations of temperature; that as we travel into warmer climates the incidence decreases. A considerable amount of work has been carried out to show that rheumatic fever has a strong correlation to poverty, or rather to environmental factors associated with poverty; but surely overcrowding must be the most important factor in these circumstances with increased incidence of infection, since epidemics have occurred in troops well nourished and living in all good circumstances except for the common factor, namely, overcrowding, and in a social survey in Perth of 173 rheumatic families 50% were adequately housed, fed and cared for.

In recent years a new approach has been made to this problem of tissue hypersensitivity to infection.

The work of Rich and Gregory, showing the occurrence in experimental and natural hypersensitivity of connective tissue changes similar to those seen in rheumatic fever, *periarteritis nodosa* and disseminated *lupus erythematosus*, has led them to relate all of these diseases to allergy.

Other pathologists have been very critically examining this hypothesis.

It is found that the commonest pathological lesion is "fibrinoid degeneration". This indicates an alteration of the connective tissue evidenced by swelling, and eosinophilia and refractivity of its fibres with similar changes in the ground substance. Specifically in rheumatic fever the cellular reaction is predominant over the changes in the non-cellular elements. Whereas in *thromboangeitis obliterans*, *periarteritis nodosa* and rheumatic fever the changes are limited to walls of the blood vessels, in affections such as disseminated *lupus erythematosus* and diffuse scleroderma the diffuse collagen disease is found in many tissues and organs of the body.

Rich and Gregory have reported the experimental production of endocarditis and lesions resembling Aschoff bodies by intravenous injections of heterologous serum proteins—the histological foci produced show fibrinoid degeneration of collagen with marked fibroblastic proliferation. It has been previously stated that there is increasing evidence linking the connective tissue in general and the interfibrillar material in particular to rheumatic disease.

Although these observations are suggestive, and it is a very attractive theory to believe that bacterial allergy causes the lesion of rheumatic fever, it is suggested that acceptance should still be withheld. Further interesting work in the biochemistry of connective tissue is now appearing.

[1] Read at a meeting of the Section of Medicine, Australasian Medical Congress (British Medical Association), Sixth Session, Perth, August, 1948.

Two compounds, hyaluronic acid and chondroitin sulphuric acid, have been isolated in connective tissue. It appears that chondroitin sulphuric acid occurs in the intima of arteries and may extend to precapillaries and capillaries, and this is suggested by the fact that when hyaluronidase is injected into the connective tissues capillary permeability is increased. It is suggested that the enzyme attacks and breaks down chondroitin sulphuric acid. The highest concentrations of hyaluronic acid in the body are found in synovial fluid and skin and next in the vitreous humour. It appears that young fibroblasts in indifferent connective tissue may produce large quantities.

Groups A and C hæmolytic streptococci in mucoid phase are the only microorganisms that produce hyaluronic acid. Non-mucoid streptococci and other cocci produce hyaluronidase.

In an epidemic of sore throats Kuttner found no recrudescences of rheumatic fever. The streptococci found were type 4. In previous years other types of hæmolytic streptococci produced recurrences. It appears that types 4 and 22 are the only strains of hæmolytic streptococci which produce hyaluronidase. Further it has been found that the antirheumatic effect of salicylates is linked up with their inhibition of hyaluronidase, that is, they decrease the spreading activity. Further, it appears that the serum of rheumatic patients and of those with sore throats due to hæmolytic streptococci has inhibitory power greater than the serum of normal persons.

This suggests that the study of interstitial mucopolysaccharides and their relations to rheumatic disease promises to be a rewarding field of investigation.

Some of the recent ideas as to the ætiology of rheumatic fever have been stated. It is gathered that there are many points of view, because finality has not been reached, but it would appear that the threads are being woven together, so that all will agree that "rheumatic fever is a specific type of response occurring at a susceptible age in the case of an individual having an inborn or acquired sensitivity to a common agent, an agent which in most persons provokes a local reaction only, or produces in other types a general response which acts particularly on the connective tissues in the walls of blood vessels".

As a public health problem, rheumatic fever ranks with tuberculosis as a grave cause of invalidism and mortality in people under the age of forty years. It accounts for 95% of defective hearts in childhood and more than one-third of crippled hearts in adult life.

In the Children's Hospital, Perth, Western Australia, in the year 1946-1947, 2·5% of the total number of out-patients who attended the rheumatic clinic and 2·1% of the in-patients were suffering from rheumatic fever.

Similar figures of incidence have been given by Boyd Graham in Victoria and Kempson Maddox in New South Wales.

The problem of control and care of this condition belongs to the whole of the community. The disease is one which has recrudescences extending over a period of years. It is associated with acute social problems; it creates psychological problems in the victims due to over-hospitalization and lack of education. The cardiac cripple needs more than just a cursory nod at the out-patient department.

In 1935 the London City Council Health Department organized a scheme for the continued care of the rheumatic child from hospital to convalescent centre and back to the child's home. This scheme maintained a file of rheumatic private patients and a file of agencies to take care of rheumatic children. This scheme impressed the rheumatic workers in the United States of America. In 1935 the *Social Security Act* had authorized an annual appropriation to the Children's Bureau of £900,000 for subsidies to the States for the care of crippled children. In 1938 the American Academy of Pediatrics urged that heart disease should be considered a crippling disease; this gave impetus to the idea that children with rheumatic fever and heart diseases should be eligible for services under the programme for crippled children, and consequently, in 1939, an additional amount of £300,000 *per annum* was allocated.

In 1940 the first state plan for rheumatic fever was inaugurated and in four years nineteen further States had implemented plans.

In 1944 the Cardiac Society and the British Pædiatric Association prepared a joint report on the care of rheumatic children and stated that, as acute rheumatism is primarily a disease of school age and the means of prevention yet unknown, efficient treatment will depend on early diagnosis and use of methods to limit cardiac damage. They proposed four measures: (i) the establishment of cardio-rheumatic clinics where the diagnosis can be established early and with certainty; (ii) the organization of hospital schools where children can be efficiently treated as long as necessary while education continues; (iii) compulsory notification of all cases of acute rheumatism, chorea and rheumatic heart disease in patients under the age of sixteen years; (iv) vocational training for rheumatic crippled children.

The American State programmes are put into effect in localities where it is possible to organize complete care for children with rheumatic fever and rheumatic heart disease, including good medical, medico-social and nursing services, and where facilities are at hand for adequate diagnosis with hospital and sanatorium care and after-care. Continuity of care is a watchword.

The direction of these State programmes is in the hands of a pædiatrician. Usually the pædiatricians are highly qualified and often hold a teaching appointment. In many cases they have been given special post-graduate training in the field of rheumatic fever.

As in Sweden, the cardiac clinics in the United States receive all referred patients from the schools suspected of having heart disease.

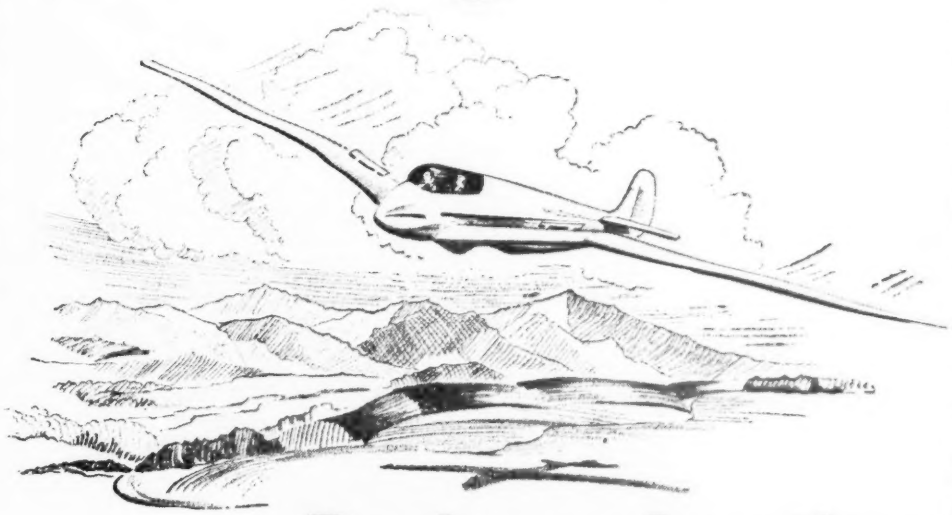
The cardiac clinic maintains (i) a diagnostic centre, (ii) a follow-up case-finding bureau, (iii) a rheumatic register, (iv) an educational programme for physicians, and (v) an educational programme for nurses and social workers.

It is agreed by all workers in this field that diagnosis of rheumatic infection is very difficult. Further, in a comparable group of children in the cardiac bureau of New York State there was a wide variation from zero to 13% in diagnosis by general practitioners. It is just as bad, perhaps worse, to place a rheumatic label on a normal child as to miss a rheumatic child. The patient with an innocent murmur can be reassured and discharged. Even in the best-run clinics, at the first examination of children suspected of cardiac disease one-third are labelled as having potential heart disease.

If it is decided that the child has had no rheumatic fever or heart disease, he is usually seen once or twice more in the clinic, not only to confirm the diagnosis, but also to make sure that the child and his family are actually free of any apprehension. The medical social worker and the public health nurse, in their contacts with the family, are very helpful in assisting the family to rid itself of any lingering fears.

If, on the other hand, the child appears to have rheumatic fever or heart disease, a decision is made as to whether the child may receive services under the State programme. The child who is accepted receives whatever type of care he needs. If he is acutely ill ,he will be given care in a hospital. When he needs prolonged rest in bed, the State agency provides the necessary medical, social and nursing care, in either a sanatorium, a sanatorial ward of a hospital, a foster home, or his own home. When he has recovered from his attack of rheumatic fever and is back in his own home, he receives the continuing supervision so essential in the prevention of recurrences. This continuing supervision includes not only periodic medical examinations, but also public health nursing help in improving the health conditions of his home and medical social help in meeting any social or emotional difficulties that might interfere with his care.

Many persons, institutions and agencies may be concerned in one or another aspect of the child's care. It is the job of the State agency to make sure that a coordinated plan is being followed in every aspect of the child's care



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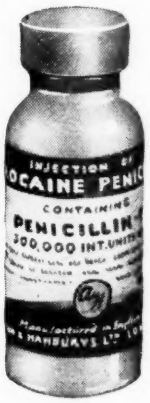

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and to prevent interrupted and contradictory types of treatment. Thus a close relationship is established with the child's family physician and school nurse, and with other interested individuals and agencies, in order that there may be mutual exchange of information and consultation concerning the child. The State agency also works with public and private agencies to secure types of care needed by many or all the children under this programme—education for the homebound child, vocational guidance and training for the child with handicapping heart disease, better housing, increased welfare budgets.

Let us apply the lessons learnt in Sweden, England and America to our own continent. The scheme should provide that in each State decentralized from the Federal Department of Health there should be a State programme for rheumatic fever linking up the health department with hospital, cardiac-rheumatic clinics, convalescent homes, the educational department and social agencies.

It is agreed that rheumatic fever is a disease which smoulders and has recurrences which over a period cause considerable cardiac damage, and so to keep a child in bed for three weeks with an acute attack and then to discharge him to full activity without any follow-up must surely be considered bad treatment and care; yet outside of well-run rheumatic clinics this is usually the rule.

In conclusion let me quote the director of the Children's Bureau in Washington:

> We must have more well-trained professional personnel; we must have more hospital and convalescent facilities adequately staffed and equipped to give good care to these children; we must have many agencies, public and private, working in harmony on a co-ordinated plan; we must have a public well informed as to the needs of children with rheumatic fever and as to how these needs can be met; we must have more funds, State and Federal.

I trust that this congress will recognize and urge that the way must be found to see to it that services are made available to all children with rheumatic fever or heart disease in this country.

SOME CLINICAL ASPECTS OF RHEUMATIC FEVER.[1]

By KEMPSON MADDOX, M.D.,
Sydney.

AT the last session of this congress I made a plea for the adoption of rheumatic fever as a notifiable disease and for a broad public plan to combat the greatest killer of the young adult in the years of promise, and I wish to repeat this appeal today.

Nature does her best to kill off the breeders of rheumatic stock, but the majority live to procreate more susceptibles, often to leave them in economic distress and exposed to all the social precipitants of clinical rheumatic fever. It thus becomes the duty of the family doctor to train himself to recognize the beginnings, to manage the victims, and to support the crippled of acute rheumatism. The story has many chapters, although the turbulence of the acute episode tends to mask a permanent change in the chief character of a strange and baffling narrative. "Once rheumatic, always rheumatic" applies equally to rheumatism as to tuberculosis or diabetes. The general practitioner knows his rheumatic families, his rheumatic neighbourhood, and the local seasonal conditions. He must be on the alert for the listless, anæmic, pale, wasted child from this environment, the child with unexplained epistaxis, with limping, torticollis or with recurrent abdominal pain, not quite definitely appendicitis. Muscle pains should be subdivided into a non-rheumatic group, relieved by heat and occurring at night ("growing pains"), and continuous pains, unaffected by heat or massage. The latter call for a clinical and laboratory search for other evidences of rheumatism. He may not have an electrocardiograph, an X-ray machine or laboratory glassware in his bag, but he has eyes, fingers and a stethoscope. Large tonsils or evidences of oxyuriasis may obtrude themselves, but even in the absence of a cardiac murmur he will suspect subclinical rheumatism, "the rheumatic state" as I prefer it. Statistically there is no true rheumatic type with red hair and large chisel teeth. The presence of fever, tachycardia, cardiac dilatation with a wavy impulse, banging first sound, or audible third sound, even in the absence of a murmur, calls for a search for nodules and rashes and for hospital investigation. A mid-systolic murmur of greater intensity than grade II, conducted outwards and enhanced by exercise, is confirmatory of endocarditis of many months' duration, while a diastolic murmur, even if short and in mid-diastole, is infallible proof that the heart has been maimed forever.

World War II strengthened the advocacy of the β-hæmolytic streptococcus as one ætiological agent. Twenty thousand of two million United States draftees were rejected, half because of rheumatic heart disease; of these, 75% could give no record of rheumatic fever. In military camps streptococcal epidemics were rife, and outbreaks of rheumatic fever followed directly in their train. In one series of 800 cases of respiratory infection, in which throat swabs failed to reveal the type A Lancefield streptococcus, no rheumatic sequelæ occurred. Another series of 400 men, in which this organism was frequently present in the fauces, contained all those who later developed rheumatic fever. Multiple types of streptococci produced rheumatic fever more often than single strains, and fourteen times more often in those with previous rheumatic fever. Further discussion of views on ætiology still not fully known, or of the role of allergy in the rheumatic state and in its allied collagen diseases, exceeds the limits set by the title of this paper, but these wartime experiences proved that the criteria for the diagnosis of the rheumatic state required amendment. They also showed the vital importance of close stethoscopic observation, over periods of many months, of sufferers from acute streptococcal infections, including scarlet fever.

The clinical picture of florid rheumatic fever is well known to you all. I wish to refer to some less easily recognized complications and sequelæ and to experiences in treatment and prophylaxis which have emerged from faithful observation of rheumatic children in special institutions devoted to their care. Rashes and nodules are of some importance in differential diagnosis, but are missed repeatedly by us all, as both patient and parent are usually unconscious of their presence, and they usually reveal themselves only to the examiner who makes a thorough search of the nude patient. Pericarditis also is often painless and transient. The frequency of pericarditis at the bedside contrasts strikingly with its constancy at the autopsy table. A sudden attack of vomiting, tachypnœa, or rise in temperature calls for the stethoscope. Where available, the X-ray silhouette is an equally valuable confirmation. In addition it is often the only certain means of recognizing the presence of rheumatic pneumonia, which may initiate the illness with dyspnœa, tachycardia, cough, and coloured sputum devoid of pneumococci. Levine feels that the consolidation of the left lung accompanying pericardial effusion is probably inflammatory rather than atelectatic. Clinical criteria of cardiac involvement which have stood the test of time are persistent pyrexia and elevation of the sleeping pulse rate, cardiac dilatation, embryocardia, gallop rhythm and arrhythmia, an early systolic murmur, coupled with cardiographic abnormalities. The latter are difficult to construe, particularly in relapses, and require a good knowledge of juvenile standards. Further assistance from the laboratory comes from a study of white cells, sedimentation rate and antistreptolysin titre, but there is no specific laboratory procedure nor any dependable skin test as yet available for diagnosis. The best instruments for diagnosis and control are still the eyes, hands, stethoscope and weighing machine, assisted by a familiarity with the natural history of the affection.

[1] Read at a meeting of the Section of Medicine, Australasian Medical Congress (British Medical Association), Sixth Session, Perth, August, 1948.

The fulminating monocyclic and polycyclic explosive episodes of rheumatic fever are usually identified accurately, provided that arthralgia is given the same diagnostic importance as joint swelling. However, we all need to learn more of the atypical forms and to pay more attention to the visceral rather than the external manifestations. Rheumatoid bronchitis, pleurisy and pneumonia are more common than many text-books indicate. Like *erythema marginatum*, profuse epistaxis or hæmaturia and nodules, the chest complications are nearly always accompanied by acute carditis. Low abdominal pain, probably due to serositis, may lead to a surgical operation, and epigastric pain can indicate liver enlargement or represent referred cardiac discomfort. Parenchymal involvement of liver, spleen, kidney and brain have been described but have generally passed unrecognized in my experience. The only important issue on the rheumatic state is the presence and degree of carditis, and the whole diagnostic and therapeutic programme must be based on this single consideration. Further, it is the mild case of carditis that is troublesome from the point of view of diagnosis. A change in the behaviour of the patient, a voluntary lessening of physical activity, emotional instability, pallor, may be exchanged for rises in temperature, tumultuous heart action, high tachycardia and tachypnœa, when insidious mild carditis intrudes. Daily variation in the quality of the heart sounds, embryocardia, retained despite alterations in the cardiac rate, soft murmurs which change in character continuously, and an unstable heart rate are all indications of heart involvement. If in addition there is a prolongation of conduction time or of electrical systole (the *Q-T* interval) or *T* wave inversion in the electrocardiogram, we are in possession of reliable evidence of acute carditis. By accepting Taran's contention that rheumatic carditis, in children at least, is almost an inevitable accompaniment of acute rheumatic disease, we are in safe territory. Rheumatic activity once established very likely continues for the greater portion of the childhood years. Some of the currently used laboratory diagnostic criteria, such as white cell count, sedimentation rate, *P-R* interval, antistreptolysin titre, and X-ray findings, have acquired an unjustified reputation as indicators of the degree of rheumatic activity. It has been proven that all these may be normal in the presence of continued rheumatic activity. Such inquiries are often relied upon to determine the duration of bed rest, and they have a value if their limitations are recognized. For instance, it is unnecessary to keep a child in bed indefinitely waiting for the *P-R* interval to return to normal, when all other criteria of activity have disappeared. In one group of patients at the Saint Francis Sanatorium in New York, 40% had a normal sedimentation rate while they still showed some clinical evidence of mild rheumatic activity. Estimation of vital capacity is a more sensitive index of the progress of active carditis and is not employed sufficiently often in this country. There is evidence to show that the duration of electrical systole is the last indication of rheumatic activity to disappear, and this criterion should be employed more frequently in Australia. It is easy to forget that some very active and emotional children frequently show a slight rise of body temperature after exercise, and this sign, when an isolated clinical finding, should not be accorded great significance. Similarly, the pulse rate must be observed during sleep rather than during the physician's visit.

Rheumatic fever in the explosive polyarthritic form in the adult must be differentiated from acute rheumatoid arthritis and infective arthritis, such as occur in subacute bacterial endocarditis, diffuse scleroderma and Reiter's syndrome. Osler's dictum to the effect that any arthritis which fails to respond to salicylate therapy is not acute rheumatism is not strictly true, although it rarely fails if an adequate salicylate blood level has been attained—for example, after 0·1 gramme per pound of body weight per day. Onset under the age of four years in childhood is very uncommon. The peak age of onset is about six years. The average overall age risk of a major recurrence is 25% for patients between the ages of four and thirteen years, 9% for those between fourteen and sixteen years, and 4% for those between seventeen and twenty-five years. Females tend to harbour subclinical infection longer than males, but both sexes are affected equally up to adolescence. The clinical course and ultimate outcome in any given case are quite unpredictable.

The obvious corollary is that if a rheumatic subject can be protected up to the age of eighteen years, or the numbers of acute episodes reduced to a minimum, the chances of entering adult life with a badly damaged heart would be considerably lessened. The components of such a prophylactic programme should consist of the following.

1. Correction of environmental factors. There has latterly been a tendency to deprecate the importance of bad housing, damp and nutritional deficiency as ætiological agents, but the fact remains that the rheumatic state is very largely found among the under-privileged sections of the community, and many surveys have revealed the presence of "rheumatic nests" in urban areas. The remedy, of course, is a social policy involving many State activities. It should soon be possible to see the effect of recent and contemporary European conditions on the incidence of rheumatic heart disease.

2. The reduction of streptococcal infection in the patient and his contacts. While this is to some extent bound up with improved living conditions, we must educate the family in the advisability of keeping their distance from the patient when they are victims of upper respiratory infection, and warn him of the necessity for reasonable care in wet or cold weather and of remaining in bed for the duration of any infective process. Attention to obviously infected pharyngeal lymphoid tissue or sinusitis is not the same as the routine removal of tonsils, which formerly was such a common practice. It is imperative that any such surgical or dental interference must be performed under the "penicillin umbrella", namely, penicillin in adequate dosage for twenty-four hours before and forty-eight hours after the operation, and at a time when all signs of activity have disappeared. As a result of the virtual epidemics of rheumatic fever which followed hard in the wake of streptococcal infections in wartime training camps in the United States of America, sulphonamides were administered to all men who had contracted streptococcal upper respiratory infection. By this means new and recurrent episodes of rheumatic fever were reduced by no less than 84%. Consolidated results of this procedure show that five out of six attacks were prevented in the susceptible subject. In 1037 "patient-seasons" 2·2% of rheumatic attacks occurred in the treated group as compared with 13·7% of attacks in the untreated group. The drug of choice is sulphamerazine, given in two doses daily of 0·5 gramme, twelve hours apart. This should be begun in hospital before the patient returns to his home environment, and continued for five years or until late adolescence is reached. In the 1037 "patient-seasons" one death occurred due to agranulocytosis, which was mistaken for an intercurrent infection, the sulphonamide dosage being increased. Reactions tend to occur in the second or third week after sulphonamide prophylaxis is begun, never after eight weeks. For six weeks, therefore, biweekly checks on leucocyte levels and urine examinations are obligatory. The appearance of a transient trace of albumin is not an indication for immediate suspension of the drug. The chance of a fatal accident from this measure is probably about 0·0025%, a justifiable risk under the circumstances. It is probable that penicillin given orally may replace sulphamerazine or sulphadiazine, as in the case of pneumococcal infections, and it should be substituted if sulphonamides are found to be impotent. The drug is replaced by full doses of salicylates during a relapse of acute rheumatism. If the physician shrinks from a five-year period of prophylaxis, at least he should ensure that it is carried out for a year following a major rheumatic attack and covering the next season for respiratory disease. He must bear in mind that the risk of recurrence is twice as great during the critical twelve months as after a year of freedom from a frank attack, and three times as great as that following two years of freedom. Such facts may be of assistance in discussion with nervous parents.

3. Reduction of streptococcal concentration in dust and blankets. This is mainly a matter which concerns hospital wards, dormitories, and special convalescent homes for cardiac cripples. Oiling of floors and bedding is very successful in reducing the bacterial count of dust, but germicidal aerosols are expensive and need special heating and cumbersome dispersal equipment.

4. Climate. The value of sending rheumatic children to warmer or tropical climates is now seriously in question. It is a frequent experience that, while they are free from relapse during such a visit, a fresh recrudescence occurs shortly after their return. Such dislocation is expensive and unpractical as a general policy and may lead to a loss of acquired streptococcal immunity.

5. Prevention of fatigue. I think many will agree that fatigue, whether of physical or of psychological origin, is a frequent precursor of childhood infection. We are all familiar with the frequency of chorea in the midst of school examinations, and some concentration on detail in the planning of the rheumatic life is worth while. The necessity for the avoidance of long journeys to school, late hours, football, swimming, many messages *et cetera* is more important in the first year after a relapse. Judgement is required to avoid the development of any inferiority complex in the mind of a child, and once we can be sure that, as judged by the criteria available, rheumatic activity is at an end, physical activity can be steadily increased. I believe that in established mitral disease any exercise short of that producing distress is allowable.

6. The role of the special hospital and of the almoner. To keep a rheumatic child in a general hospital ward is to ask for trouble, as they are hotbeds of respiratory infection. Special convalescent homes have proved their value in both England and America in the case of children coming from an unsuitable economic environment. These institutions are always in charge of physicians of great experience in cardiac rheumatism, with laboratory facilities to assist them in assessing the duration of convalescence and gradual restoration to activity. Much of our more recent knowledge of the fluctuations in the rheumatic state have come from such workers. Wards can be kept free from streptococci and carriers isolated and treated; visitors can be controlled, diet supervised, and school continued. Apparently very few untoward psychological disturbances have been generated among the inmates. The institution must form part of a coordinated pattern whereby contact is continually maintained with the child's parents, his usual medical attendant, school doctor and school mistress, and a supervisory centre where he is constantly observed throughout the remaining years of his susceptibility. This centre is often an out-patient department of the Home, and the bond is maintained by a specially trained band of social service workers who know how to appraise and better the home conditions and psychological environment, visit children and arrange for their instruction or entertainment if in bed in an approved home or foster-home of their own, arrange for school or vocational tuition, arrange transport to the centre or to school, and assist parents to carry out their doctor's advice.

We see then that such care may cost too much for individual or private agencies, or even individual hospitals. We must accept rheumatic fever and rheumatic heart disease as a public and community health problem, requiring broad planning and determined organization. Under the more favourable living standards of this country, and with its relatively small population, we should be able to be just as successful in an all-out attack on the rheumatic heart disease problem as no doubt we shall be against tuberculosis. However slow our authorities may be to commence such a campaign, we as practitioners can play our part at once in the close follow-up of individual streptococcal infections of all types, from sore throats to scarlet fever, in the recognition of atypical types of rheumatic fever, and in the continued unremitting observation and guidance of those affected with cardiac rheumatism.

THE PRESENT STATUS OF PENICILLIN THERAPY IN THE TREATMENT OF SUBACUTE BACTERIAL ENDOCARDITIS.[1]

By DOUGLAS J. THOMAS,
Melbourne.

I SHOULD like, without further ado, to thank you for the honour done me by asking me to present this paper. Previous speakers have again shown that rheumatic fever remains as one of the major scourges of childhood. Subacute bacterial endocarditis only too frequently intrudes as the final complication which closes the life story of the patient who contracted this disease.

In 1921 my attention was forcibly directed to this malady by the death of a close relation from this cause. The circumstances were of clinical interest. An elder brother contracted *erythema nodosum* and rapidly made a complete recovery. Then a sister of this patient within a few days developed a sore throat followed also by *erythema nodosum*. She too made a good recovery. Very shortly a younger sister contracted a sore throat and quinsy. This third patient was a schoolgirl known to have an aortic murmur. There was some doubt as to whether this represented a congenital or an acquired lesion. She too developed *erythema nodosum*. This was followed by subacute bacterial endocarditis, which ended fatally. At that time (1921) neither penicillin nor "sulpha" drug was known. From that date until June, 1945, I did not personally encounter one case of subacute bacterial endocarditis successfully treated.

The author is aware that from time to time cases of apparent cure were reported in the literature, and with the introduction of "sulpha" drugs such cures did occasionally result.

There have been many milestones in the history of medicine. Some will remember the thrill they experienced when they first used insulin in the treatment of acidotic coma, or when as a result of liver therapy a patient with pernicious anæmia was restored to an active and happy life.

The story I have to tell today concerning the control of subacute bacterial endocarditis by penicillin is equally dramatic.

Before proceeding to the discussion of treatment of the established infection I should like to say something about preventing its occurrence after extraction of teeth. It is essential that proper penicillin cover be given whenever teeth are extracted from a patient with a past history of rheumatic infection. This will require further education of both the medical and the dental profession. I sometimes feel that the young sufferer from rheumatic carditis should be given an identity card and that this should be shown to each and every medical man and dentist who attends the patient, and that on this card should be the inscription: "I once suffered from rheumatic carditis." In too many public hospitals the dental services are taken for granted, and we as a profession exhibit gross discourtesy in not admitting our dental colleagues to full status and in denying them full cooperation. In my opinion every in-patient of a hospital should, on admission, be seen by a dental officer, who could thereupon attach his dental report to the case history. In this manner full reciprocity would be fostered.

Turning now to the question of treatment of subacute bacterial endocarditis by penicillin, I should like, briefly, to state the principles involved. We hope to establish rapidly and maintain in the blood-stream such a concentration of the drug as will be adequately bacteriostatic. Furthermore, we will continue with treatment, not merely until the blood-stream is sterile, but until every single colony within the vegetations on the valves has perished. Moreover, because of the possibility of relapse, we will

[1] Read at a meeting of the Section of Medicine, Australasian Medical Congress (British Medical Association), Sixth Session, Perth, August, 1948.

continue treatment and supervision during the dangerous period of relapse.

We cannot hope to restore a diseased heart to normal. Let me give examples drawn from other conditions to illustrate this point. If a young subject with a healthy heart develops tachycardia, failure does not result, and if the tachycardia is brought under control, the patient still has a healthy heart. But if after a coronary occlusion abnormal rhythm develops and if the abnormal rhythm is controlled, the patient still has a diseased heart. All that we can hope to do with penicillin therapy is to eradicate infection and restore the heart to a functional state, as nearly as possible equal to that which existed before the infection became established.

When the use of penicillin was first introduced in the treatment of subacute bacterial endocarditis, it was scarce and costly. Attempts were therefore made to effect cure at a minimum cost. But bit by bit we have extended our knowledge and increased our dosage. In the light of published figures I am now going to set down what I regard as an adequate method of using penicillin in this disease. Having secured blood-culture identification of the offending organism, give the patient not less than half a million units per day, preferably by three-hourly intramuscular injection. If the bacteriologist reports to you that the coefficient of resistance of the organism is not in excess of six, and if the blood-stream is promptly sterilized, this daily dose of half a million units should be continued for not less than twenty-eight days. But if prompt sterilization of the blood is not secured, then the daily dose should be increased fourfold and a daily dose of two million units given. But if, when the patient is first seen by you, it is clear that the condition is one of relapse, or if in other words a first course of treatment has failed, then you should begin your course of treatment by giving not less than two million units and continue your treatment for not less than fifty-six days. I would ask you to remember clearly these two basic sets of figures, and I shall now endeavour to show you on what evidence I have formulated them.

In the *British Medical Journal* of January 3, 1948, Professor R. V. Christie reported to the Medical Research Council the results of trials carried out on a series of 269 patients suffering from this disease. These patients were drawn from a total of fourteen centres, and all who are engaged in treating patients with this condition should seriously examine this report.

In one group of their cases the patients (52) received a total of five million units of penicillin. Those in one subgroup received one mega unit daily for five days; all died. Those in another subgroup received 0·5 mega unit daily for two days; 50% of these suffered relapse or died infected. Those in another subgroup received 0·25 mega unit for twenty days, and only 22% of these relapsed or died infected. The conclusion drawn was that, within those limits of dosage, duration of treatment is more important than daily dose.

In a second series of their cases the patients (158) were treated for twenty-eight days, each one with a variable daily dose, dosage varying between 0·1 mega unit and 0·5 mega unit *per diem*.

Whereas 41% of those receiving 0·1 mega unit suffered relapse or died infected, only 6·9% of those receiving 0·5 mega unit daily did so.

It appears then that the administration of 0·5 mega unit *per diem* for twenty-eight days can be expected to control the infection in, say, 90% of patients, but about 35% of these die of cardiac failure and other complications. This dosage represents a total of fourteen million units.

But for a second course, given after relapse, the position is very different. A minimum course of two mega units *per diem* for eight weeks is suggested, representing a total of 112 million units.

What, then, is the optimum penicillin blood level to be arrived at and how long should this be maintained?

It will be remembered that the standard Oxford strain of *Staphylococcus aureus* is controlled by a concentration of 0·01 to 0·02 unit of penicillin per millilitre and that the coefficient of resistance of any particular organism is expressed as a simple multiple of the resistance of the Oxford staphylococcus. In other words, if the concentration of penicillin required to control one organism is six times the concentration required to control the Oxford organism, then the coefficient of resistance of that organism is six. In his report Christie set out in Table VII a summary of his cases showing the percentage of patients who suffered relapse or died infected, in terms of the coefficient of resistance of the organism. Within a considerable range the resistance of the organism was not related to the percentage of "cures".

Evidence now strongly suggests, however, that once the coefficient of resistance exceeds a certain figure, doses greater than half a mega unit *per diem* are needed. I have quite arbitrarily set this figure down as six, because this exhibits rather more caution than choosing an arbitrary figure of eight. Earlier in this paper I stated that if prompt sterilization of the blood-stream is not effected by this dose, the dose should immediately be multiplied by four and increased to two million units per day.

Many observers have stated that the best results are obtained when blood levels are maintained at a figure between five and ten times the in-vitro sensitivity figure. As a matter of experience it will be found that somewhere between the basic course of 0·5 mega unit daily for twenty-eight days and the relapse course of two mega units daily for fifty-six days will be found a suitable course in most resistant cases. But, as with insulin, the optimum intensity of treatment must be determined as an individual proposition and determined after consultation with the bacteriologist.

In a series of patients treated in Melbourne and now presented, of eleven patients treated five died and in six the condition was controlled and they appear to have recovered. In eight of the cases the condition was due to *Streptococcus viridans* and in three to a co-related streptococcus.

Of the five deaths, four were associated with congestive cardiac failure; one patient died with the condition uncontrolled and without cardiac failure. The total dosage given to the patients "cured" ranged between eight mega units and 24 mega units. The total dosage given to the patients who died ranged from four and a half mega units in the case of a patient dying soon after admission to hospital to 30 mega units in the case of one patient still receiving penicillin at the time of death.

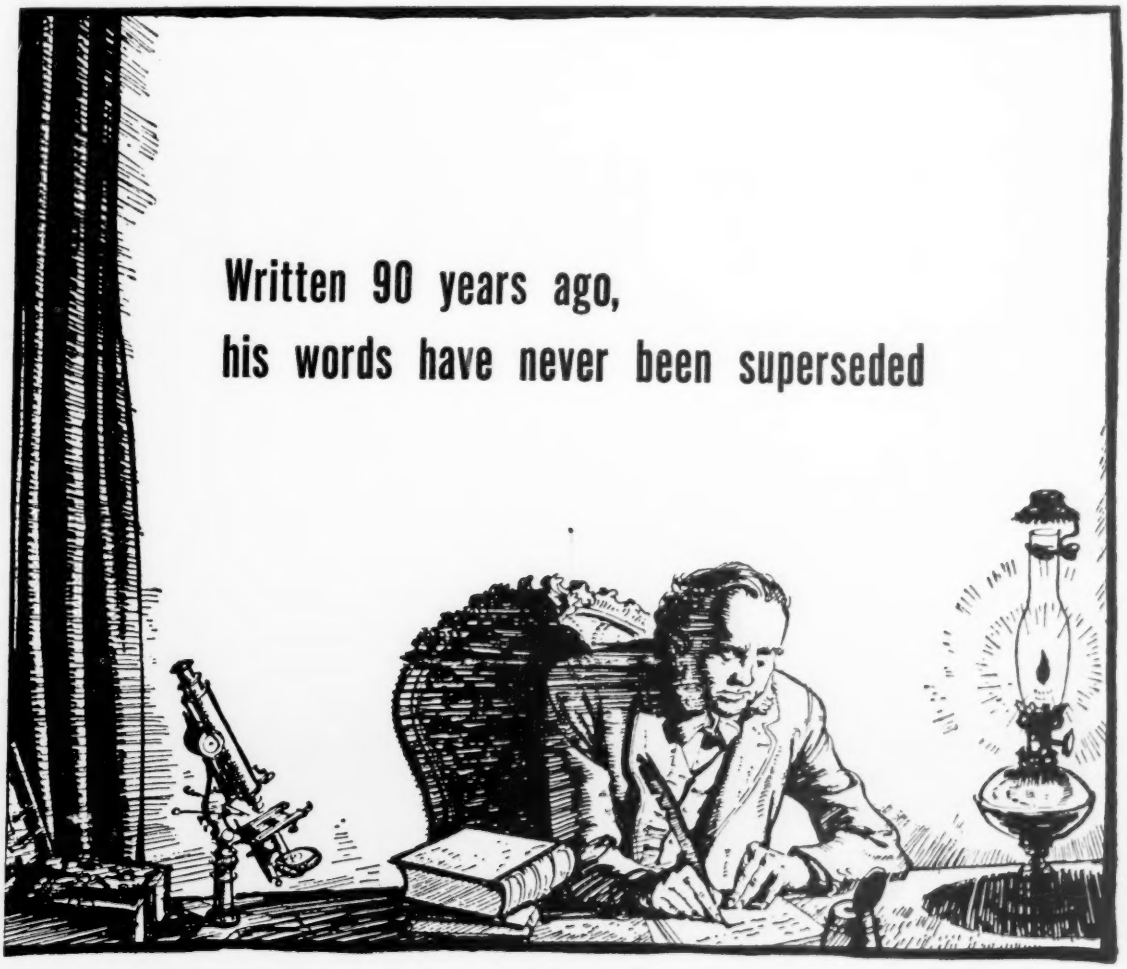
I have stated that some patients were "cured". More correctly I should say that their condition was controlled. The minimum follow-up period in these cases was 210 days and the maximum 740 days. In the case of three of these patients the extraction of teeth without penicillin cover was the cause of death.

It has been shown that organisms may be grown from the valves after death in roughly 30% of the cases in which infection had been apparently controlled.

It is clear, therefore, that cessation of treatment too early constitutes our major mistake. It cannot be too strongly stressed that the closest supervision of these patients is needed for at least six months after the cessation of treatment. For at least two months their 4 p.m. temperature should be recorded, and if there is any rise of temperature a second major "relapse" course of treatment should be commenced. Fortunately 90% of such relapses occur within a month of treatment, but the danger of relapse may persist for a month or more.

Approximately 30% of patients treated die from cardiac failure. Four patients out of a total of eleven in my series died in this way. In the one case in which the patient died without cardiac failure and with infection uncontrolled treatment had been hopelessly inadequate.

The clinical appearance of the patient when treatment is initiated is extremely important. Generally speaking, those who look well will recover, but those who look ill will not. The important factors are the previous cardiac reserve, the size of the heart, the patient's age, the type of cardiac lesion present, the general clinical appearance of the patient and, above all, the length of time that has elapsed before treatment.



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I have not discussed the use of "sulpha" drugs or anticoagulants. There is no contraindication to the use of "sulpha" drugs. But my own feeling is that in the presence of adequate penicillin dosage their use is unimportant. Anticoagulants certainly have a place in treatment. If intravascular thrombosis has occurred, and more especially if pulmonary thrombosis or embolism is present, they should be employed. Heparin followed by dicoumarol should be employed and adequate control of prothrombin levels maintained. If the daily dose of penicillin is adequate and treatment is maintained long enough, the healing of vegetations will take place as well without as with anticoagulants.

Concerning the highly resistant infection, we should never despair. Intensive therapy may convert failure to success.

Cases have now been reported in which, even though 15 or 20 million units per day were required, success has been achieved. This was produced by steady increase of the daily dose of penicillin to a point where, in spite of the high coefficient of resistance of the organism concerned, a bacteriostatic blood level of penicillin was maintained.

I regret that time will not permit of discussion of the use of streptomycin or of "block" agents such as "Caronamide".

In conclusion let me say again that close cooperation is needed between physician and bacteriologist and that each case must be treated as a distinctly individual proposition.

Conclusions.

1. The successful treatment of subacute bacterial endocarditis requires close cooperation between physician and bacteriologist.

2. The in-vitro sensitivity of the organism has relatively little bearing on the outcome, but is a rough guide as to the daily dose of penicillin required.

3. For a first course of penicillin in the treatment of subacute bacterial endocarditis half a mega unit of penicillin should be given daily for four weeks; this may be expected to control the infection in a very high percentage of cases.

4. For a second (relapse) course two million units should be given daily for eight weeks.

5. In cases of resistant infection, if adequately bacteriostatic serum levels of penicillin are maintained for long periods, therapy failure may be converted to therapy success, even though a daily dose of 10, 15 or even 20 million units per day is required.

Acknowledgements.

I should like to thank Dr. Harry Hiller, my associate physician at the Royal Melbourne Hospital, for his assistance in searching records, and the honorary medical staff for making such records available. Moreover, I wish to thank Kodak (Australasia), Proprietary, Limited, for preparing lantern slides at very short notice.

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THE ROLE OF SULPHANILAMIDE PROPHYLAXIS IN RHEUMATIC FEVER.[1]

By LAWRENCE STOKES,
Melbourne.

ON October 18, 1945, John Parkinson delivered his Harveian Oration on "Rheumatic Fever and Heart Disease" before the Royal College of Physicians. He concluded with these words:

> Let us proceed in a fresh spirit of post-war dedication, and look in hope and confidence for the ultimate defeat of this the most deadly enemy of youth.

Rheumatic fever, which as a general rule is acquired in childhood, is the commonest cause of heart disease in persons under the age of forty years. Most of the deaths from cardiac causes before that time are a consequence of rheumatic carditis.

In Great Britain it is estimated that some 300,000 persons are affected with rheumatic heart disease and 15,000 to 16,000 die annually from its effects. The figures in the United States of America are 1,000,000 affected, with the annual post-rheumatic deaths in the neighbourhood of 40,000. Rheumatic fever is, therefore, a very great social problem, and throughout the world clinical, pathological, bacteriological and sociological research is being carried out in an attempt to lessen its incidence and its tendency to recur. This paper is concerned principally with the problem of reduction in recurrence rate, and to this end our experience in the prophylactic use of sulphanilamide will be described.

Sulphonamide prophylaxis is based on the general conception that rheumatic fever is a specific response to a group A hæmolytic streptococcal infection occurring in an individual, usually a child, possessing an inborn or inherited susceptibility. I must mention, however, that an eminent clinician working in the rheumatic field who does not agree with the streptococcal hypothesis is May Wilson, of New York.

During the past ten years much work has been done with sulphonamide prophylaxis in an attempt to lessen rheumatic recurrence. This research has been carried out almost solely in the United States of America and numerous papers have appeared, such as those by Thomas and France (1939), Coburn and Moore (1939-1940), Kuttner and Reyersbach (1943), Chandler and Taussig (1943), and Dodge *et alii* (1944).

During the recent war years similar work could not be carried on in Great Britain for many reasons, not the least being the mass evacuation of children from the large cities. The American results on the whole have been most favourable in that recurrences are very much less in sulphonamide series than in control series.

An analysis of nine American experimental series of cases between the years 1939 and 1946 shows a recurrence rate of 19% in the control group, whereas the rate was only 1·5% in the sulphonamide group. The first group comprised 709 patient-seasons and the second 852.

I shall now summarize some of the results which have been obtained in the rheumatic clinic in the Children's Hospital in Melbourne.

Sulphonamide prophylaxis was commenced four years ago, and since then some 211 children have been receiving treatment, many of them continuously during the whole

[1] Read at a meeting of the Section of Medicine, Australasian Medical Congress (British Medical Association), Sixth Session, Perth, August, 1948.

four years. Until the last few months sulphanilamide has been the drug used, and we have attempted to maintain a blood level between 1·5 and 2·0 milligrammes per 100 millilitres of blood. To obtain this level the child of average weight between the ages of seven and twelve years is given a half-gramme tablet twice a day, and those younger half this amount. On the other hand, some of the older children up to the age of fifteen years were given three tablets each day. There have been very few toxic reactions and no serious worries with regard to leucopenia. Some children have ceased treatment for various reasons, mainly their failure to cooperate, moving away from Melbourne and, in some cases, as a result of being transferred to adult hospitals. During the past few months we have commenced sulphadiazine prophylaxis, using doses half those mentioned for sulphanilamide. It is too early as yet to refer to this group.

Analysis of our figures has shown that in Victoria there is not a marked seasonal variation either in the time of onset of the first attack or in the tendency to relapse.

Before this work was commenced we felt that this was the case; hence in our series prophylaxis has been carried out continuously during the whole period of each year.

When should prophylaxis be commenced? I want to stress that sulphonamide should not be given during the active stages of the disease. It should not be commenced until a state of clinical quiescence is reached. The administration of sulphonamide during activity tends to excite the rheumatic process.

How long should treatment be continued? This question cannot be answered at the present time. From our experience we suggest three to four years or longer, especially if the original rheumatic attack occurs early in the child's life. There is also the important fact that some recurrences do take place several years after the original attack. For example, in our series 13% of recurrences took place at least five years after a previous major episode.

Our results show that there is a greater percentage of relapses in the second year than during the one immediately following the initial rheumatic episode. It may be that our children have had, as a general rule, a longer convalescent period than similar patients nursed in clinics abroad, where the recurrence rate is greatest in the year immediately following a major episode. The average time of treatment in hospital and convalescence in Melbourne is usually six to eight months, during which the patients receive schooling and diversional therapy.

In the sulphanilamide prophylaxis series, comprising 565 person-years, there were 19 recurrences, the percentage recurrence rate being 3·4, whereas in the control series, totalling 971 person-years, there were 115 recurrences, or a percentage of 11·8. The 3·4% of relapses with sulphanilamide is really a very conservative figure, as several children were included when the recurrence was not really definite on clinical grounds. It is also worth mentioning that sulphonamide prophylaxis in our group covered those periods during which the recurrence rate could be expected to be high. The interval between commencement of prophylactic administration of sulphanilamide and the last major episode of rheumatic fever was less than one year in 132 cases (62%), one to two years in 55 cases (26%), and two or more years in 24 cases (12%).

What happens to patients after sulphonamide is stopped? In our series two children have had recurrences some months after the cessation of sulphanilamide prophylaxis.

G.J., now aged twelve years, had a mild attack of rheumatic fever in 1941. In September, 1945, the prophylactic administration of sulphanilamide was commenced, and in September, 1947, it was discontinued. In April, 1948, there was a recurrence of rheumatic fever.

E.T., now aged eleven years, had a mild attack of rheumatic fever in 1941 and a recurrence in 1944. The prophylactic administration of sulphanilamide was commenced in September, 1944, and discontinued in February, 1947. In July, 1947, a recurrence took place.

Study of the effect of prolonged sulphanilamide prophylaxis on the streptococcal carrier rate shows a significant reduction in the group A streptococcal carrier rate; this parallels the reduction in recurrence rate.

Other uses have been found for sulphonamides in rheumatic fever. For some years we have been using a sulphonamide, such as sulphadiazine, in full therapeutic doses as a "cover" to protect children with a rheumatic history from a possible streptococcal invasion following the extraction of septic teeth and after tonsillectomy. In recent months, since penicillin has been freely available, we have been using it as a "cover", but sulphonamides still have their use if at any time penicillin is not to hand. We admit our children to hospital and keep them there for a few days during and after these simple operative procedures as a precautionary measure.

Conclusion.

We feel that this work has passed beyond the experimental stage and that all suitable children with a definite history of rheumatic fever who are able and willing to cooperate should be given the benefit of sulphonamide prophylaxis, provided it is carried out under careful supervision.

I cannot stress my last comment too fully. On many occasions I have seen or heard of children who either have been "put on sulphonamide" too soon after the last rheumatic episode or have not been watched and checked carefully.

In conclusion, our experience has shown that sulphanilamide prophylaxis properly controlled is of real benefit to the rheumatic child.

Acknowledgements.

All this work has been carried out by an enthusiastic team, and I want to thank particularly Professor Sydney D. Rubbo and Miss Margaret Holmes, of the school of bacteriology in the University of Melbourne, both of whom are active members of the rheumatic unit, whose help, inspiration and advice has meant so much.

THE TREATMENT OF HERNIA.[1]

By C. H. LEEDMAN, M.C., F.R.C.S.E.,
Perth.

I PRESENT to you this evening a very commonplace subject. I make no apology. Its commonplace constitutes its importance. Gastrectomy may be the province of the few, but few men in general practice will, without a struggle, renounce the attempt at the repair of an inguinal hernia. Again gastrectomy comes the way of the few. Hernia is almost universal. In these days of industrial activity it is becoming one of the major accident (compensation) causes of loss of working time. It affects mainly the mature adult, in his prime. How enticing it is to take into hospital the patient with a small inguinal hernia for operation—a major procedure pretty well devoid of risk. Can you promise the patient that his internment, his loss of wages and his enforced idleness over an extended period will not be a prelude to a further incarceration when the recurrence takes place?

I have dissected out the literature of recurrences, and the percentage of up to ten and more is amazing. There may be a few amongst us with happy results, but in the main the results are bad. Reviewing my own experiences in a period of thirty-five years, I am by no means thrilled. Over these years I have employed many techniques, and have watched each fashion come and go. In no case has it been possible to present to the general body of practitioners a method applicable to all cases, and carrying an absolute measure of success. We should be ashamed to admit to our patients that we cannot ask them to submit to the operation with a guarantee, as in appendicectomy, of a certain cure. I am not going to labour the distinction between direct and indirect types of hernia. Our experience over a considerable number of cases at the

[1] Read at a meeting of the Western Australian Branch of the British Medical Association on September 15, 1948.

Repatriation General Hospital, Hollywood, is that we can expect recurrences from all types of surgeons. Some of the patients have already had two or three recurrences before we see them. Twenty-five years ago we were using silver filigrees; but partly owing to fear of sepsis and the distaste for leaving a foreign body in the tissues, and partly owing to the advent of methods of fascial repair, we abandoned this operation.

Some years ago I was impressed with the method of Coles, at the Chelsea Seamen's Hospital, and with little modification we have used that method in our present series of cases. The results so far have been so uniformly good that I will endeavour to "sell" the method to you. It has two advantages: (i) it is within the province of the ordinary operator; (ii) it seems possible to succeed in every case. With the advent of penicillin, much of the fear of sepsis has gone, and experience with cotton, wire *et cetera* has removed fears of leaving foreign bodies in the tissues. The procedure is applicable to all types of hernia: (*a*) the ordinary indirect hernia, (*b*) the recurrent hernia (direct or indirect), (*c*) the direct hernia, (*d*) the sliding hernia and (*e*) the large scrotal hernia.

One established technique is applicable to all types, and this is an immense advantage.

The Operation.

Pre-operative preparation of the patient is simple. After a bath and the shaving of the suprapubic hair, the skin is cleansed on the operating table with a 1:1000 aqueous solution of "Zephiran", then with spirit, then with "Zephiran" solution, and dried.

At Hollywood we prefer nitrous oxide and cyclopropane anæsthesia, but spinal anæsthesia with "Percaine" and local anæsthesia are also used. Cotton sutures are used throughout.

The steps of the operation are as follows. (i) Expose the cord and carefully dissect it up, so that it lies freely in the wound. (ii) Incise the aponeurosis of the external oblique, and dissect the upper flap freely from the conjoint tendon. (iii) Free Poupart's ligament well below, and clean it thoroughly, till the pubic tubercle is demonstrated at the medial end of the space. (iv) Display the edge of the pyramidalis or rectus with its vertical fibres. (v) Free the overhanging edge of the conjoint tendon. (vi) Incise the cremaster, excise the sac and repair the cremaster. (vii) Incise the vertical fibres of the rectus and bury the medial end of the deep filigree in the muscle, laying out the deep filigree upon the *fascia transversalis* and extraperitoneal fat *et cetera*. (viii) Tuck it snugly under the cord, displacing this as far laterally as possible to provide a strong posterior wall to the inguinal region. (ix) With a few interrupted cotton sutures fasten the conjoint tendon superficially to the filigree and on to the deeper part of Poupart's ligament, thus covering the filigree completely. Tie the lateral sutures first, as these force the filigree into its bed in the rectus muscle. Note how the weak area of recurrence, alongside the pubic bone, is protected. (x) Replace the cord, and cover it with the superficial filigree. (xi) Insert sutures over the flap of the external oblique and Poupart's ligament, "double-breasting" it if you desire. (xii) Insufflate each layer in turn with sulphanilamide and "Monacrin" (1%) powder. (xiii) Cleanse with "Zephiran" solution (1:1000). (xiv) Paint the area with "Mastisol". (xv) Cover the wound with sterile lint. (xvi) Do not disturb the wound for ten days.

The following are some helpful points in technique. Dissect up all flaps, to avoid any tension. Be sure of all hæmostasis and oozing. Do not handle the filigrees with any metal instrument. Do not close the distal end of a scrotal sac; leave it *in situ*. We have not hesitated to repair both sides at once, and have seen no harm result. We believe cotton is preferable to catgut. When large dissections are necessary, use penicillin before and after operation.

Post-Operative Care.

Early movement is encouraged. Early ambulation is permitted and the patient leaves hospital in the fortnight.

The question of resumption of work arises. Some of our patients, who have sedentary or clerical jobs, resume their work on leaving hospital. We encourage the manual labourer to increase his activity gradually, and most should be able to carry on by the eighth week.

Comment.

Of 140 patients treated so far we have not had one return. Though time may alter this, we are dealing with types of patients who would assuredly report back to us. Our technique will, I am sure, be responsible for some mistakes and some trouble; but I am equally sure that the fault will be ours and not the method's.

Many objections will be raised. The filigrees are not fixed by sutures. Do they move? Apparently not. The X-ray pictures we have taken show them as we have placed them. Do they cause the patient pain on bending? We have not found patients to complain. Do the filigrees cause hæmorrhage? They may lie over the vessels, but they are perfectly smooth, and we have not experienced this complication. Do they perforate the gut? They are smooth and free, and if they are properly made and inserted, this should not be possible. We have noticed no increase in post-operative pain; nor should the patient be aware of the presence of filigrees. They do not alter with time. I have recently examined a patient in whom I implanted them twenty-five years ago. Age makes no difference. Our best result was obtained in the treatment of a man, aged seventy-three years, in whom both sides (each a "second hand job") were operated on under local anæsthesia at the one sitting. The patient walked out the same day, was ambulatory at once, and left hospital in twelve days.

Summary.

I have endeavoured to present (i) a reliable method of operating in a notoriously uncertain field, (ii) a method applicable to all types of inguinal hernia, (iii) a method within the province of the ordinary operator. It demands that which is common to all operations—namely, care in preparation, with care in execution—and the more faithfully the method is carried out, the more certain will be the results.

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(1) P. P. Cole: "The Filigree Operation for Inguinal Hernia", *The British Journal of Surgery*, Volume XXIX, 1941, page 168.

Reviews.

EDEN AND HOLLAND'S MANUAL OF OBSTETRICS.

"EDEN AND HOLLAND'S MANUAL OF OBSTETRICS" has had a high reputation as a standard text-book of obstetrical practice and teaching and this reputation is enhanced in the ninth edition written by Alan Brews.[1] Ten years have elapsed since the previous edition appeared and extensive changes and the inclusion of new work have been necessary and are summarized in the author's preface.

The sections dealing with the basic principles of obstetrics, particularly normal and abnormal labour and obstetrical operations, have been retained as presented by Sir Eardley Holland in previous editions. The book covers the whole field of obstetrics in a concise and readable manner and special features are the good illustrations, the "guides to further reading" at the end of each section, and the inclusion of some forty X-ray reproductions. The increased importance of X-ray investigation in ante-natal, natal and post-natal care is evident throughout the book. New work on the general physiology of the fœtus and the parturient woman is given and includes the circulation of maternal blood within the placenta and the circulation of the fœtus.

The biological tests for pregnancy are concisely summarized and illustrated. There has been little advance in knowledge concerning the ætiology of the toxæmias of

[1] "Eden and Holland's Manual of Obstetrics", by Alan Brews, M.D., M.S. (London), M.R.C.P. (London), F.R.C.S. (England), F.R.C.O.G.; Ninth Edition; 1948. London: J. and A. Churchill, Limited. 8½" × 5½", pp. 814, with illustrations. Price: 42s.

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pregnancy, but new conceptions on the significance of hypertension are important in immediate and late prognosis. Diagnosis of the progress of labour does not include mention of the valuable information obtained by noting the movement and descent of the anterior shoulder by abdominal palpation. In the section on control of pain in labour the work of Grantley Dick Read on removal of the emotion of fear and the teaching of muscular relaxation is briefly given. Many Australian obstetricians will note with interest the continued preference for chloroform against ether for the second stage of labour. The use of trilene as an analgesic and light anæsthetic agent in the second stage of labour is described. Ergometrine acts as rapidly and as powerfully as pitocin, is less erratic in its action, its effect is much more prolonged, and it is free from the danger of producing a condition comparable to "pituitary shock". The transperitoneal lower segment Cæsarean section, with a transverse incision, is the operation of choice in the majority of cases. The additional operative dangers involved in extraperitoneal lower segment section largely outweigh its theoretical advantages. In view of Holland's work on the rupture of Cæsarean section scars, it is of interest to note the routine method of suture of the uterine incision in three layers. The first is a continuous fine chromicized stitch through the decidua, the second is of interrupted catgut sutures for the muscle, and the third is a continuous fine chromicized suture for the peritoneum.

The author has succeeded in presenting "the art of obstetrics in as simple and readable a form as possible and in a compass not beyond the capacity of the heavily burdened student and practitioner".

HOMOSEXUALITY.

THE age-old problem of the attraction of people of the same sex to each other is dealt with at some length in "Sex Variants" by George W. Henry.[1] This work is a collection of eighty case histories of both men and women, related in full detail. It is a book primarily for psychiatrists and medical practitioners; otherwise no useful purpose is served by the relation of the practices indulged in by homosexual persons. The book would only pander to the pornographic tastes of those who have no scientific interest in the subject. In this book the carefully compiled personal histories serve to throw considerable light on the mechanisms which play their part in directing the faltering footsteps of the sexual invert down the tangled paths of abnormality. The question of the relative parts played by constitution, environment and deliberate choice will always be a debatable one. Possibly these case histories may help in answering it. The subjects of the present study have been astonishingly frank, taking an almost morbid pride in the discussion of their irregularities of conduct. No doubt exhibitionism is a feature of their disorder of the sexual instinct. Surprisingly, quite a number of women have related their experiences in minute detail. It is unusual to obtain an admission from women of homosexual tendencies. In them such trends are concealed by those demonstrations of affection which, however insincere, are common to their sex. Furthermore, they possess the capacity for convincing denial in the face of almost overwhelming evidence. Because of this there is comparatively little information available about the female form of homosexuality or lesbianism as it is also called. This name derives from the island of Lesbos, where the Greek poetess Sappho lived. Fragments of her ardent poems addressed to women have survived and, because of these and the fact that she had a number of girls living with her, she was reputed to be an invert. It is quite possible that she has been misjudged. She probably ran what would now be regarded as a finishing school for young ladies, teaching them the social graces, and the poems were possibly commissioned by young men who lacked her facility of expression. Whatever the truth, the fact remains that there has been very little written on this aspect of the problem and "Sex Variants" serves a useful purpose in adding to the literature on the subject.

Homosexuality has always been a matter of interest, scientific, moral or merely salacious. Many famous people have been accused of suffering from the taint. The malicious Suetonius said of Julius Cæsar that he was "every woman's husband and every man's wife". He may, of course, have intended this as a compliment. In his day homosexuality was not frowned upon as it is now, although it is no longer an offence in France. Although the constitutional basis for this condition must be admitted in many cases, making the outlook hopeless as far as any treatment of these effeminate men and masculine women is concerned, nevertheless one must deplore the increasing number of apologists for these people who encourage them in the belief that they can flaunt public opinion and decency with impunity. Citizens are entitled to protection from incidents which are offensive to good taste, and offenders must be made to realize that they are expected to exercise as much control over an aberrant sexual impulse as others are over a normal one. This is an aspect which most persons overlook. Reading the present volume and noting the pleasure these individuals take in being different from others might serve to bring it home to them.

Several interesting facts are revealed by these detailed case histories. The incidence of instability in other members of the family, the frequency of alcoholism in lesbians and their continual fear of infidelity by the partner, and the presence of other, and more dangerous, anti-social activities in the repulsive male prostitute are all noted. There are also numerous carefully drawn illustrations on the gynæcology of homosexuality and an appendix containing masculine-feminity tests, physical characteristics suggesting masculinity or femininity, anthropological data and the internal measurements of sex variants.

This work is one of the most comprehensive and painstaking of its type. It should prove of interest not only to the psychiatrist, but also to the social worker and the lawyer. The family background is carefully drawn, general impressions of the individual are given, the personal history is fully detailed and the sexual habits of the subject of the inquiry are fully described in his own words. Included in each history is an account of a complete physical examination, with the results of X-ray examination of skull, chest and pelvis, a comment on the case and a brief *résumé* of the outstanding features. This book represents such a thorough study of every possible aspect of homosexuality that it seems almost unfair to cavil at the author's didactic statement that: "All persons who manifest violent emotional reactions to the sex variant . . . may be on the defensive lest they disclose their own unconventional desires and impulses." Surely it is perfectly natural for the decent, normal person to experience repugnance at the sight of those whose mannerisms betray them as denizens of that dim half-world of sex with its unnatural practices and its flamboyant narcissism.

[1] "Sex Variants: A Study of Homosexual Patterns", by George W. Henry, M.D., with sections contributed by Specialists in Particular Fields, sponsored by Committee for the Study of Sex Variants, Incorporated. One-Volume Edition; 1948. London and New York: Paul B. Hoeber, Incorporated. 9" × 6", pp. 1156, with illustrations. Price: $8.00.

A CRUSADER FOR CHILD WELFARE.

IT is hard to suppress a feeling of pride in a noble achievement which has entirely originated and attained to full fruition in a sister dominion; and it is all the more gratifying to know that a particular achievement is concerned with an important humanitarian movement which has been the means of initiating progress toward the physical, mental and moral betterment of the race. By the time this century had advanced on its way many valuable measures had already been instituted in different parts of the world with the object of promoting maternal and infant welfare, but it is doubtful if any country had gone so far as to make the cause of infant welfare a national issue, and to demonstrate conclusively from practical experience that radical reform was an urgent necessity. How scientific methods in the feeding and care of infants came to be generally adopted in New Zealand is skilfully and elegantly related by Miss Mary King in her book "Truby King, The Man".[1]

One of the most vivid and lasting impressions that remain after reading this book comes from a realization that the whole conception, systematization and final promulgation of "Karitane" ideas was very largely a family affair; the founder of the new faith, his devoted wife and adopted daughter fearlessly carried the gospel of infant welfare with a missionary zeal into all parts of the Dominion. In their many fervent appeals to the general public they were materially assisted by a useful armamentarium of cold scientific facts, a persuasive eloquence and a forthright conviction in the undeniable truth of their message. Before long they could write and speak with authority about the remarkable, almost dramatic, reduction in infant morbidity and mortality, once the new principles in mothercraft and infant care were adopted and conscientiously translated into action as a community effort. It is noteworthy that the

[1] "Truby King, The Man: A Biography", by Mary King; 1948. London: George Allen and Unwin, Limited. 5½" × 8", pp. 346, with illustrations. Price: 18s.

tremendous task of organization, the establishment of special hospitals for the care of babies with nutritional disorders, the training of "Plunket" nurses and the continuous publicity campaign that was necessary to keep the facts of child health before the people, eventually were accorded general recognition because of Dr. Truby King's unflinching determination to persevere, despite the aloofness of his colleagues in the medical profession and the cynical opposition of people in high places, who could have done so much to lighten his burden. There is quite an epic in the altruism, moral courage and devotion to duty with which Truby King and his family continued their long crusade in pursuit of an ideal.

There is no object in going into details about the form and contents of this interesting book; suffice it to say that Sir Truby King's family background, his brilliant academic record as a medical student at the University of Edinburgh, his intensive post-graduate training and his broad humanitarian instincts all provided a splendid equipment for the kind of service that he gave so freely to the public. As medical superintendent of the Seacliff Mental Hospital for many years he showed himself to be a reformer in the care and treatment of the insane, until his preoccupation with infant welfare, and then the acceptance of his ideas by the New Zealand Government, demanded that the whole of his time should be devoted to this cause. Ultimately he had the satisfaction of knowing that centres for the propagation of his doctrine had been established in Great Britain, in the sister dominions and in widely scattered foreign parts throughout the world.

The book is illustrated by a number of excellent photographic studies and portraits, and its human interest is accentuated by the inclusion of many personal letters and documents. Workers in any field of social endeavour should find help and inspiration here.

FRACTURES AND DISLOCATIONS.

THE fourth edition of Dr. Geckeler's book, "Fractures and Dislocations", has now been published.[1] In the preface the author states that the book is a condensed account prepared for the use of students and general practitioners. It is a very good book for its purpose, particularly when used by practitioners. It is forthright and dogmatic and only those methods which the author has found of value are described. These methods are common-sense ones and are those which are easily used by general practitioners. As is proper in a modern book, a great deal of the explanation is done by excellent diagrams and photographs. New work brought forward during and since the war has been included, but only where it is likely to be of use in civil practice. The book can be recommended as giving a concise and sound account of what a general practitioner should know about fractures.

TREATMENT OF HEART DISEASE.

A MONOGRAPH (in the true sense of the word) on "Treatment of Heart Disease" by W. A. Brams is intended to provide a systematic and practical guide for the general practitioner and medical student.[2] The author may be said to succeed in his aim: he evidently writes from a ripe experience and his book is fairly comprehensive in scope, yet he does not say too much or dazzle the reader with science. The first chapter of the book deals with the pharmacology of the drugs used in the treatment of heart disease and this occupies 52 pages; the second chapter, on congestive heart failure, occupies 24 pages; and the remaining twelve chapters, dealing with the different types of heart disease, together occupy 96 pages. The section on the confused subject of digitalis was evidently written before the newer knowledge of the pharmacology of this drug, gained by catheterization of the heart, made possible a more successful selection of patients to receive it. The author is partial to the rectal administration of digitalis and advises a "cleansing" enema just before the drug is given; but he does not warn the student that an enema is capable of causing much distress to patients with congestive heart failure. On page 22 he refers to the Eggleston method of giving digitalis, without stating what this is; it is over thirty years since Eggleston propounded the notion of rapid digitalization and the average student of today has never heard of him.

In a number of small points the author's methods might not find general acceptance; for instance, many physicians would not wait for such definite indications as marked dyspnœa and pulmonary œdema before administering oxygen for myocardial infarction; many would believe that bed rest less absolute than that recommended would be better for those with heart failure—immobility and vegetation are, paradoxically, strenuous exercises. Again, it might be objected that the administration of oxygen through a single nasal catheter, as the author recommends, gives a less concentration of oxygen in the alveolar air for any given rate of flow than administration through two catheters, one in each side of the nose; also that the use of heparin for coronary thrombosis was sufficiently well grounded at the time the book was written to receive mention along with dicoumarol; also that, having stated that it is the condition of the arteries rather than the height of the blood pressure which is important in asymptomatic hypertension, the author might well have placed less emphasis on the use of powerful drugs for reducing the blood pressure and alluded to the harm which may result from bringing the blood pressure down artificially. However, such matters as these do not impair the value of the book. It is interesting to note that the author has obtained satisfactory results from the treatment of hypertension with the rice diet of Kempner: this appears to be much the same as the old antiphlogistic diet of former centuries. In a future edition it might be helpful to include a section on the use of physiotherapy in congestive heart failure—there is already one on occupational therapy.

AN ATLAS OF NEUROPATHOLOGY.

IT is altogether fitting that the pioneer laboratory of Ford Robertson and his successors in the Scottish Mental Hospitals Scheme should today provide us with a most excellent atlas and self-teaching manual on what is too often considered a difficult subject.[1] That there is nothing occult about neuropathology, provided one has good demonstration material at hand, is clearly revealed by this atlas. Its greatest contribution is in making available to students of the nervous system a forceful pictorial record of specimens diligently collected over half a century in the Scottish mental hospitals.

An excellent balance has been struck between surgical, medical and mental neuropathology, and there has been a commendable shifting of emphasis from the usual post-mortem philosophy to the cogent problems of causation, progression and prognosis. The reproductions are good, and the accompanying clinical notes bring the pathological entities out of a row of glass bottles and blow the breath of life into them once more. Perhaps the highest praise which one can give this workmanlike volume is to say that it is a book of neuropathology, not an abstraction about neuropathology. It will be an unfaltering guide to students, will make the clinician and pathologist better pathologists.

THE CARE OF PATIENTS BEFORE AND AFTER OPERATION.

"PREOPERATIVE AND POSTOPERATIVE CARE OF SURGICAL PATIENTS", by H. C. Ilgenfritz, with its 898 pages, is a monument to the industry of its author.[2] Nearly everything that has been written on the subject in the American literature in the last few years has been collected, sorted and abstracted; the references have been given. The book therefore is not suitable for consecutive reading, but it is useful as a mine of information, which may be dipped into

[1] "Fractures and Dislocations for Practitioners", by E. O. Geckeler, M.D.; Fourth Edition; 1948. Baltimore: The Williams and Wilkins Company. Sydney: Angus and Robertson, Limited. 9" × 5¾", pp. 388, with many illustrations. Price: 37s. 6d.

[2] "Treatment of Heart Disease", by William A. Brams, M.S., M.D., Ph.D.; 1948. Philadelphia and London: W. B. Saunders Company. Melbourne: W. Ramsay (Surgical) Proprietary, Limited. 9" × 6", pp. 211, with a few illustrations. Price: 24s. 6d.

[1] "Atlas of Neuropathology", by Wm. Blackwood, M.B., F.R.C.S.E., T. C. Dodds, F.I.M.L.T., F.I.B.P., F.R.P.S., and J. C. Sommerville, A.I.M.L.T., with a foreword by Professor A. Murray Drennan, M.D., F.R.C.P.E., F.R.S.E.; 1949. Edinburgh: E. and S. Livingstone, Limited. 9½" × 7", pp. 215, with 262 illustrations, some of them coloured. Price: 35s.

[2] "Preoperative and Postoperative Care of Surgical Patients", by Hugh C. Ilgenfritz, A.B., M.D., F.R.C.S., with a foreword by Urban Maes, M.D., D.Sc., F.A.C.S.; 1948. St. Louis: The C. V. Mosby Company. Melbourne: W. Ramsay (Surgical) Proprietary, Limited. 8½" × 5¼", pp. 904, with illustrations. Price: 75s.

as occasion arises. Indications and technique of operations are dealt with, so that the book is almost a text-book of surgical therapy.

Its chief defect is its complete and uncritical acceptance of every modern device for forcing "hyperalimentation" by the intravenous and other routes upon patients, often regardless of their need and of their powers of assimilation. This information is presented as though the feeding can be accurately and scientifically controlled by various biochemical tests, and by reference to grammes and Calories and other standards borrowed from the more exact sciences. These parts of the book include perhaps unnecessary fussing, and may well be read in conjunction with Cuthbertson's article on nutrition in the *British Medical Journal* of October 23, 1948.

MEDICAL RESEARCH.

DURING the tragic years of the Second World War there emerged several discoveries in the realm of medicine which proved to be of the greatest value in conserving life—notably the discovery of the anti-malarial drugs and penicillin. These and other discoveries have provided a great stimulus to medical research during the post-war years, and it is with great pleasure that we acknowledge the first volume of "Methods in Medical Research" from the pen of Van R. Potter, the Editor-in-Chief, and his many contributors, who are leading American investigators.[1] The preface sets out the main reasons for the publication of this series—to provide a comprehensive and critical description of those scientific methods in medical research "which are of wide actual or potential application". The subjects chosen for this volume are "Assay of Anti Biotics"—Henry Welch, Editor; "Circulation and Blood Flow Measurement"—Harold R. Green, Editor; "Selected Methods in Gastroenterologic Research"—A. C. Ivy, Editor; and "Cellular Respiration"—Van R. Potter, Editor. This first volume of 372 pages is well set out and illustrated. Sufficient detail is given to guide workers in the respective fields and a comprehensive series of references is included. Thus in the section "Measurement of Hepatic Blood Flow", Stanley E. Bradley, of Columbia University, describes the fascinating and almost incredible feat of inserting an intravenous catheter into the liver of a conscious patient. The catheter is passed into the hepatic vein under vision with the X-ray screen by way of the cubital vein, superior *vena cava* and right atrium. Thus blood can be collected as it flows from the liver and compared with the peripheral blood.

If the high standard of Volume I is maintained, this series is commended to all who are interested in the recent developments in medical research and especially to those members of our profession who have chosen the noble "way of an investigator".

RHEUMATIC DISEASES.

A TEXT-BOOK of the rheumatic diseases is scarcely a novelty at the present time. Nevertheless, W. S. C. Copeman has edited such a book compiled by 24 contributors and extending to 600 pages.[2] He divides the subject into acute rheumatism, non-articular rheumatism (fibrositis or myalgia), gout, rheumatoid arthritis and osteoarthritis. Spondylitis and villous arthritis are also discussed. Ten to fifteen *per centum* of patients are said to have unclassifiable chronic joint pains. There is a brief history of the complaints alluded to, with a discussion of the anatomy of the skin and subcutaneous tissues. The differential diagnosis includes eighteen different conditions, but syphilis and gonorrhœa are not included. The anatomy and physiology of joints are considered fully. Climate is discussed, but there is little new evidence produced and no original observations by the author. Generally it appears that rheumatic diseases occur more often in northern climates, that cold and damp aggravate them, and heat and dryness relieve them.

Chapters on treatment of acute rheumatism by Lord Horder and articles on other rheumatic conditions by well-known authorities are included. For gout, Copeman advises the traditional diet, with a reduction to milk, eggs, fruit, cereals, spaghetti, macaroni and tapioca in acute attacks. In these acute attacks he advises that 1/120 grain of colchicine should be given at two-hourly intervals, for five doses or more, till pain is relieved. If diarrhœa ensues before pain is relieved, tincture of opium, 10 minims with 30 grains of bismuth oxycarbonate, may be given every two hours. If colchicine is not effective, cinchophen, or salicylate of soda, 20 grains every four hours, with adequate fluids and alkalis, may be given. Between attacks moderate exercise, low purine diet and scanty protein and fat are advised. Colchicine one one-hundred-and-twentieth of a grain combined with aspirin fifteen grains and alkalis, thrice daily, for two or three days a week, reduces the frequency of attacks. Operations induce attacks. Cinchophen seven and a half grains twice daily for four days before and four days after operation is recommended, unless the patient is known to respond to colchicine, in which case that drug may be given in doses of one one-hundred-and-twentieth of a grain thrice daily for three days before and three days after operation.

In chronic gout the same régime, combined with measures to promote the mobility of the joints, and the application of heat are suggested. The intravenous use of vaccines is not approved. Fibrositis, sciatica and osteoarthritis are discussed at length, with appropriate details of the pathology. Radiology of rheumatism also has a chapter, which includes reproductions of skiagrams. There is no doubt that Copeman has collected a lot of useful information about rheumatic disease, and if one can learn things from books, here is a book from which one might learn them.

[1] "Methods in Medical Research", edited by Van R. Potter; Volume I; 1948. Chicago: The Year Book Publishers Incorporated. 9" × 6", pp. 390, with illustrations. Price: $8.00.

[2] "Textbook of the Rheumatic Diseases", edited by W. S. C. Copeman, O.B.E., M.D., F.R.C.P.; 1948. Edinburgh: E. and S. Livingstone, Limited. 9¼" × 6", pp. 624, with many illustrations, some of them coloured. Price: 50s.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"A Short Practice of Surgery", by Hamilton Bailey, F.R.C.S. (England), F.A.C.S., F.I.C.S., F.R.S.E., and R. J. McNeill Love, M.S. (London), F.R.C.S. (England), F.A.C.S., F.I.C.S.; Eighth Edition; Part III; 1948. London: H. K. Lewis and Company, Limited. 8½" × 5½", pp. 224, with illustrations, some of them coloured. Price: £2 12s. 6d. the set. Not sold separately.

The third part of a five-part work.

"Surgery Orthodox and Heterodox", by Sir William Heneage Ogilvie, K.B.E., D.M., M.Ch., F.R.C.S.; 1948. Oxford: Blackwell Scientific Publications. 8¾" × 5½", pp. 256. Price: 12s. 6d.

A collection of less technical addresses, previously published, but now out of print.

"The Frontal Lobes: Proceedings of the Association for Research in Nervous and Mental Disease, December 12 and 13, 1947, New York"; Editorial Board, John F. Fulton, M.D., Charles D. Aring, M.D., S. Bernard Wortis, M.D.; Volume XXVII; 1948. Baltimore: The Williams and Wilkins Company. Sydney: Angus and Robertson. 9" × 6", pp. 924, with 237 illustrations. Price: 93s. 6d.

Comprises 37 chapters in four parts, dealing with the biology of the frontal lobes, experimental studies, clinical studies and frontal lobotomy.

"Synopsis of Psychosomatic Diagnosis and Treatment", by Flanders Dunbar, M.D., with collaboration; 1948. St. Louis: The C. V. Mosby Company. Melbourne: W. Ramsay (Surgical) Proprietary, Limited. 7½" × 4¾", pp. 506, with few illustrations. Price: 49s.

An attempt to draw attention to the psychological basis of many conditions.

"Anæsthesia for the Poor Risk and other Essays", by William W. Mushin, M.A. (Oxon.), M.B., B.S., F.F.A., R.C.S., D.A.; 1948. Oxford: Blackwell Scientific Publications. 8½" × 5½", pp. 74. Price: 7s. 6d.

Succinct statements of the author's views of various subjects connected with anæsthesia, formulated after discussion with his colleagues.

"Physics and the Surgeon", by H. S. Souttar, D.M., M.Ch. (Oxon.), F.R.C.S. (England); 1948. Oxford: Blackwell Scientific Publishers. 8½" × 5½", pp. 72, with 41 illustrations. Price: 7s. 6d.

Written to help the surgeon to understand the mechanism of the body and the physical basis of some of the appliances used in surgery.

"The Parathyroid Glands and Metabolic Bone Disease: Selected Studies", by Fuller Albright, A.B., M.D., and Edward C. Reifenstein, junior, A.B., M.D., F.A.C.P.; 1948. Baltimore: The Williams and Wilkins Company. Sydney: Angus and Robertson. 9" × 5¾", pp. 424, with 156 illustrations. Price: 60s.

The subjects selected are those about which the authors have had first-hand experience.

The Medical Journal of Australia

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All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

STRULDBRUGS.

WHEN Shakespeare died at the age of fifty-two he was, in the estimation of the time, an elderly man; one remembers in this connexion that "old John of Gaunt, time-honoured Lancaster", who was regarded in his century as the embodiment of venerable old age, went to his grave when fifty-nine. Still Shakespeare could not possibly have reached that stage of senility which he has so mercilessly depicted in his dramas. The last scene of all, "sans teeth, sans eyes, sans taste, sans everything", in the famous passage of *As You Like It*, is restrained in comparison with other references to the physical accompaniments of old age which display a stark and even repellent realism. Hamlet, at his favourite pastime of teasing Polonius, remarks: " . . . the satirical rogue says here that old men have grey beards, that their faces are wrinkled, their eyes purging thick amber and plumtree gum, and that they have a plentiful lack of wit together with most weak hams." The Chief Justice in Henry IV, Part II, sharply rebukes Falstaff with the bitter taunt: "Do you set down your name in the scroll of youth that are written down old with all the characters of age? Have you not a moist eye? a dry hand? a yellow cheek? a white beard? a decreasing leg? an increasing belly? Is not your voice broken? your wind short? your chin double? your wit single? and every part about you blasted with antiquity?" Sometimes Shakespeare depicts old age in a manner designed to arouse pity as in *King Lear* and also in the *Comedy of Errors* where Aegeon makes the pathetic declaration:

> Though now this grained face of mine be hid
> In sap-consuming winter's drizzled snow,
> And all the conduits of my blood froze up,
> Yet hath my night of life some memory,
> My wasting lamps some fading glimmer left,
> My dull deaf ears a little use to hear.

In the Adam of *As You Like It* we have a picture of the ancient servitor who had avoided excesses in youth and so possessed an old age like a lusty winter, frosty but kindly; he elects to follow the fortunes of his exiled master, but soon collapses through fatigue and hunger—which is just exactly what would happen in reality. Old age, somewhat idealized, has been presented sympathetically in literature from Cicero to Wendell Holmes, and one remembers in this connexion the moving portraiture of old age in "Ecclesiastes", especially in the noble English of the authorized text—the trembling hands, the scanty teeth, the white hair, the bent back, the early awakening in the morning, failing desire and the physical infirmity which makes even the grasshopper a burden.

It can hardly be disputed that the most terrible exposition of the lineaments of human life in its decline has been given by Swift, whose "fierce indignation" directed against his fellow man has here reached an awful acme of intensity. Gulliver visited the land of Luggnagg and there heard of the existence of struldbrugs, that is, human beings endowed with immortality. Only rarely was a struldbrug born, so that they constituted but a small proportion of the community. Swift depicts Gulliver as at first enthralled at the possibilities in a struldbrug existence; everyone desires a long life and here is the hope fulfilled; how he would revel in such a privilege; how he would amass learning and wealth, study political changes, educate the young by his varied and protracted experience, help his less fortunate fellow citizens by every means in his power; and how he would cultivate the arts and sciences! It is interesting by the way to note that amongst the scientific inventions urgently wanted which he, were he a struldbrug, would single out for special study, was a method for determining longitude at sea. Not even Swift, who made many shrewd guesses, could have imagined that this immensely important problem would be solved by his contemporary John Harrison, son of a Yorkshire carpenter, who succeeded when eminent mathematicians and physicists failed, and all through a little home-made mechanism ticking inside a box! Gulliver at last met the struldbrugs, and what a disillusionment took place! "They were not only opinionative, peevish, covetous, morose, vain, talkative, but incapable of friendship and dead to all natural affection." "As soon as they have completed the term of eighty years they are looked on as dead in law. After that period they are held incapable of any employment of trust or profit; they cannot purchase lands or take leases; neither are they allowed to be witnesses in any cause either civil or criminal." With remarkable physiological insight Swift wrote of them: "They have no remembrance of anything but what they learned and observed in their youth and middle age, and even that is very imperfect." This emphasis on the loss of memory has a profound significance. Other deteriorations are spread over the span of years; a falling off in the ability of the eye to focus near objects actually begins in early childhood and visual aids are generally necessary in the forties; decline of muscular power is seen in the modern athlete in the late twenties. The time of shedding of teeth and hair shows great variation, but these declensions are isolated phenomena and have no ulterior implications. With memory the case is far otherwise. As the physiologist Hering was probably the first to point out, once it is postulated that memory has a physical basis, it matters little whether this depends upon a pattern of reduced synaptic resistances or some other neural change, then it must be conceded that the capacity to store memories has a physically imposed limit. As old age progresses the available endowment for remembering is curtailed and by extrapolation one can assume a time when all ability to remember new experiences would cease to exist. At such

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a stage continued existence would be an anomaly if indeed it could occur at all, for with changing environment there would be complete lack of adjustment for the simple reason that experience could not teach. A being on reaching this stage could be kept away from actions dangerous to life only by sequestration and by unremitting vigilance on the part of nurses. Such a state of life would be useless even if it could be maintained. Hence the philosophical hypothesis that the physical basis for memory necessitates death. Swift was only too right in his satire; a struldbrug or human immortal would eventually become a dreadful nuisance.

With the application of modern medical science and engineering the expectation of life is increasing; the average age is steadily going up; the percentage of the elderly is mounting; a diminishing proportion of youthful workers is supplying with pensions a multiplying host of the old. Is this indisputable trend to be met by what Americans call the salvaging of old age, namely, the assignment of useful work, not exacting in time or in mental and physical effort, to those who formerly lay in invalid beds or dozed in armchairs at family hearths? Or are we some day to build hostels for struldbrugs where human automata are watched and guarded from unwitting and unpremeditated suicide? This is a social problem which cannot be lightly dismissed as fanciful or long distant in time, for its beginnings are evident. Is there any prospect that the study of gerontology and applications of the findings will postpone the suspension of reason and memory until such time as the physical mechanisms of the body no longer function?

Current Comment.

ACUTE RHEUMATISM AND THE SALICYLATES.

THE administration of salicylates in the treatment of acute rheumatism is said to have been introduced into practice by T. J. Maclagan in 1874. Empirical then, its use is still empirical today; and yet it remains the most popular form of therapy. Its symptomatic effectiveness is undisputed, but no general agreement has been reached on the claim that it is a specific or curative agent. As far back as 1913, Poynton and Paine in their book "Researches and Rheumatism" rejected the claim unequivocally on the basis of fifteen years' clinical observation and research, while still classing the salicylates as "the most valuable we possess" among drugs for the treatment of rheumatism. In a "Text-book of Rheumatic Diseases" published in 1948 under the editorship of W. S. C. Copeman, Lord Horder states: "In the matter of drugs, there is a consensus of opinion that salicylic preparations deserve the name of specific remedies. They control the arthritis, cause the fever to decline, and cut short the course of the disease process." Between and around these two points of view opinion has varied and still varies widely. Claims that the drug is a specific remedy have been greatly stimulated by the suggestions of Coburn, published in 1943, that organic heart disease may be prevented if sodium salicylate is given by intravenous infusion so that a high plasma concentration of salicylate is maintained throughout the active phase of the disease. Commenting on Coburn's results, James Reid,[1] of the Clinical Chemotherapeutic Research Unit of the Medical Research Council in the Gardiner Institute of Medicine, University of Glasgow, puts forward the view that if cure of rheumatic fever really depends on the concentration of salicylate in plasma it is conceivable that the variable results of treatment with sodium salicylate by mouth may be attributed to failure to attain or maintain sufficiently high plasma salicylate levels in all patients treated in this way. He has investigated this possibility by estimation of plasma and urinary salicylate levels of patients with rheumatic fever, firstly, to define the variation in the levels encountered in a group of patients to whom the same doses of the drug were given by mouth, and secondly, to examine the relation of these levels to the disappearance of joint pains, fever and tachycardia, and to the final cure of the disease as judged by the return of the erythrocyte sedimentation rate to normal. He found that the variation of the plasma and urinary salicylate levels of patients receiving the same doses by mouth was considerable. Both plasma and urinary salicylate levels tended to fall after an initial peak level had been reached, in spite of continuous oral administration. Reid points out that the cause of this fall is not yet known, but thinks that it is possibly related to the alkali reserve and pH of the urine; for when plasma and urinary salicylate levels are rising to their peak the alkali reserve and urinary pH are falling to their lowest levels, and a rise in the plasma salicylate level is associated with acidosis. Patients treated with salicylates alone had higher plasma and urinary levels than those given sodium bicarbonate as well. This was thought to be due to the increased urinary excretion when bicarbonate was given. The results suggest to Reid that disappearance of symptoms and cure of the disease are related to the concentration of salicylate in the plasma. In some cases relapses of symptoms occurred during administration of full doses of the drug, but plasma levels were found to be low at the time of the relapse. When the average plasma salicylate level was less than 20 milligrammes *per centum* the erythrocyte sedimentation rate remained unchanged; when the level was between 20 and 30 milligrammes *per centum* the rate fell slowly, and when the level was between 30 and 40 milligrammes *per centum* the rate rapidly returned to normal. The remarkable consistency of the results suggests that a fall in the erythrocyte sedimentation rate may be directly related to the plasma salicylate level, and that cure of an attack of rheumatic fever depends on the attainment of a high salicylate level in the plasma and the maintenance of this level so long as the disease may be presumed active, either by the presence of symptoms or by a raised erythrocyte sedimentation level. The total urinary excretion of salicylate gives a fairly reliable indication of the plasma concentration of the drug and may provide a simple method of controlling therapy. Reid concludes that completely effective treatment of rheumatic fever with salicylate seems to demand at present that dosage should be controlled by repeated plasma or urinary salicylate estimations, firstly because cure of the disease depends not only on reaching but also on maintaining a high plasma salicylate level, secondly because the variation in plasma levels of patients receiving the same dose of the drug is great, and thirdly because the initial peak is followed by a fall which in some patients may reach so low a level that a relapse will occur unless the dose of drug by mouth is increased at once. In noting this work of Reid's for future reference, we shall do well to recall work by some other authors. For instance H. A. Warren, C. S. Higley and F. S. Coombs reported in the *American Heart Journal* in 1946 an investigation of the intensive treatment of acute rheumatism and concluded that large doses of salicylate did not shorten the period of activity of the disease or prevent relapse. Again, Katherine Smull and her co-workers found in 1944 that the administration of sodium bicarbonate with sodium salicylate had a profound effect in lowering the concentration of the latter drug in the blood (see THE MEDICAL JOURNAL OF AUSTRALIA, December 16, 1944), the corollary being that the administration of sodium salicylate in enteric-coated tablets without bicarbonate should produce the desired effect with a lower dosage.

It seems then that, despite some dissentient voices, the present emphasis is on the attainment and maintenance of high plasma salicylate levels, and the problem of toxicity immediately arises. Coburn requires that the blood salicylate level should be maintained above 350 micro-

[1] *Quarterly Journal of Medicine*, April, 1948.

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grammes per millilitre. R. Wégria and K. Smull,[1] in a study of 35 patients in whom levels of this order were maintained, found that the commonest and earliest sign of toxicity, tinnitus, usually occurred when the salicylate level was around 200 microgrammes per millilitre; then followed deafness, occasionally nausea and, rarely, vomiting or albuminuria. At levels above 500 microgrammes per millilitre serious manifestations occurred—hyperpnœa, sinus tachycardia, apathy, drowsiness, even unconsciousness, and auditory and visual hallucinations. All of these toxic reactions disappeared when the salicylate level fell below 500 microgrammes per millilitre. More recently J. D. P. Graham and W. A. Parker,[2] of Glasgow, have compared toxic effects and plasma levels and have attempted to investigate the cause and mechanism of production of the more common serious symptoms of overdosage. Observations were made on 40 patients of both sexes and various ages receiving salicylate therapy for rheumatic diseases, acute and chronic. In addition a group of 30 non-rheumatic convalescents were given similar doses of salicylate and observed. A total of 58 patients developed toxic symptoms of varying severity. These symptoms appeared in a definite order and were related primarily to plasma salicylate levels, although tolerance to salicylate developed with continued therapy. These symptoms and the corresponding plasma salicylate levels (in milligrammes *per centum*) were: erythema 19·6, tinnitus 24·3, deafness 25·5, nausea 26·7, vomiting 28·2, albuminuria 32·2, hyperventilation 32·8, severe sweating 36·6, headache 39·8, vertigo 40·0, severe drowsiness 40·4, acetonuria 43·7, hæmaturia 46·8, confusion 46·9, excitement and euphoria 48·1, pulmonary œdema 49·4, severe dyspnœa 50·9, hæmorrhage 51·8. It will be noted that the more serious effects occurred at lower levels than those recorded by Wégria and Smull. Graham and Parker state that the presence of tinnitus, deafness, nausea and transient vomiting served as a guide for dosage and indicated that the plasma level was approaching 35 milligrammes *per centum*, above which level toxic manifestations were more severe. These symptoms (tinnitus, deafness, nausea and vomiting) usually disappeared after a few days, even if the same dosage of salicylates was continued, but if they became troublesome they were relieved by omission of the drug for a day or two. The skin rash was regarded as of no significance and disappeared with continued administration of salicylate. Hæmaturia and albuminuria disappeared with continued therapy and increased fluid intake. Headache, vertigo, mental symptoms and severe vomiting were controlled by the stopping of salicylates and the giving of alkali and fluid. Hyperventilation, which Graham and Parker rightly call one of the more serious toxic manifestations, tended to disappear if the plasma salicylate level did not continue to rise in the few days after its appearance, but if such a rise did occur, dyspnœa became severe; in such circumstances they advise that salicylates must be withheld and fluids and alkalis be given. The hyperpnœa is thought to be due to reflex stimulation of the respiratory centre through afferent fibres of the vagus nerve and to be independent of the blood acid-base relationship. Sodium bicarbonate given by mouth lowers the plasma salicylate level by increasing excretion and so relieves the hyperpnœa. Pulmonary œdema occurred in one case, but cleared rapidly with atropine, morphine and orally administered sodium bicarbonate. Two patients had transient epistaxis and one fatal generalized hæmorrhage. It is pointed out that salicylic acid is a degradation product of the hæmorrhagic agent hydroxycoumarin and does increase the coagulation time and diminish the plasma prothrombin level. This aspect was investigated in 1944 by Fashena and Walker (see THE MEDICAL JOURNAL OF AUSTRALIA, April 28, 1945), who advised the concomitant administration of vitamin *K* with large doses of salicylates. Graham and Parker conclude that the occurrence of tinnitus, deafness, headache, nausea, sweating and transient vomiting is simply an indication that the plasma concentration of the drug is approaching the essential therapeutic level; the symptoms call for no treatment and soon disappear despite continued use of the drug. Repeated estimations of salicylate plasma concentration should be carried out. It has been Graham and Parker's practice to maintain a level of 30 to 35 milligrammes *per centum* for the first five to seven days, during which time the symptoms of rheumatic fever were well controlled and after which the patient generally tolerated higher levels without harm. The appearance of drowsiness or mental upset, pulmonary œdema, hæmorrhage, hyperventilation or severe vomiting necessitated the modification of salicylate therapy. They hold that if a plasma concentration of 35 milligrammes *per centum* is reached in the first seven days, a careful watch must be kept for these more alarming toxic effects and frequent estimation of the plasma salicylate level during this period is necessary. So the position stands at present. The older system of giving moderate doses with a minimum of inconvenience to the patient has been challenged as providing only symptomatic treatment when curative treatment is possible. The treatment claimed to be specific and curative is liable to be unpleasant and not without danger to the patient and is complicated by the need for biochemical control. A great deal of pharmacological investigation remains to be carried out, and it seems unlikely that the true worth and optimal application of salicylate therapy in acute rheumatism will become clear until the elusive essential action of the salicylates is uncovered.

[1] *The Journal of the American Medical Association*, October 13, 1945.

[2] *The Quarterly Journal of Medicine*, April, 1948.

THE TREATMENT OF TYPHOID CARRIERS.

TYPHOID FEVER is quite rare today, but the occasional typhoid carrier still presents a formidable problem. Various workers have demonstrated a high concentration of penicillin in the urine and in the bile, and the sulphonamides are also excreted in the urine. Knowing that typhoid carriers harbour the organisms in the biliary or the urinary tracts or both, J. W. Bigger and R. A. Daly[1] treated ten chronic carriers with penicillin (30,000 units) and sulphathiazole (52 grammes) given over a period of six and a half days. One patient died from other causes. One patient is regarded by most exacting standards as cured. The remaining eight patients relapsed in from five to fifty-six days. Three of the eight were then treated by the intermittent method with sulphathiazole (100 grammes) and penicillin (57,600,000 units) given in twenty-one days, four treatment periods, each of three days, being alternated with rest periods of two, three and four days. Two of these patients are regarded as cured; the third relapsed after fifty-seven days. The standards of cure were extremely strict and, though the series is small and the results are limited, no other treatment has been so effective. The patients were rather elderly females, who had been carriers for a long time, and most were in fairly poor physical condition. Persons who have been carriers for shorter periods may respond better, and possibly the method itself is open to modification and improvement. It certainly warrants further trial.

[1] *The Lancet*, February 19, 1949.

THE HALF-YEARLY INDEX TO "THE MEDICAL JOURNAL OF AUSTRALIA".

THE index for the second volume of this journal for 1948 (July to December) is at present in the press and will shortly be available. Copies will be posted to those who have previously asked to have their names put on the index list. A copy of the index is sent to all libraries, medical societies and associations, as well as to journals having exchange arrangements with THE MEDICAL JOURNAL OF AUSTRALIA; there is no need for these bodies to ask that a copy should be sent. Other readers wishing to receive a copy are asked to write to the Manager at the office of the journal, The Printing House, Seamer Street, Glebe, New South Wales.

Abstracts from Medical Literature.

THERAPEUTICS.

Papaverine.

B. L. ZOHMAN AND H. I. RUSSEK (*The Journal of the American Medical Association*, April 3, 1948) discuss the uses of papaverine in the treatment of cerebral angiospasm or vascular encephalopathy. From four to eighteen grains per day of papaverine hydrochloride were given orally in the treatment of encephalopathy associated with hypertensive disease and cerebral vascular disease without hypertension. The authors state that this drug decreased the frequency of recurring cerebral episodes in two patients subject to them. The symptoms for which treatment was given were aphasia, transient hemiplegia or hyperæsthesia and numbness of one or more limbs, recurrent blindness and mania. The symptoms are said to be controlled by papaverine more effectively than by other means. Continuous administration of the drug for weeks or months is advised. Toxic effects were rare and the drug did not cause drowsiness, sleep or analgesia.

Hypertension.

J. BROZEK *et alii* (*The Journal of the American Medical Association*, August 28, 1948) discuss the effect of drastic food restrictions on the heart and on hypertensive conditions. Experiments in Minnesota where 34 healthy young men restricted their daily diet to 1600 Calories with 49 grammes of protein for six months showed an average loss of weight of 23%. Blood pressure, pulse rate and basal metabolic rate also fell and the size of the heart diminished. There was no sign of heart failure. Similar experience was recorded in Leningrad during the siege. The blood pressure of many hypertensives returned to normal during the semi-starvation of the siege. The incidence of cardio-vascular disorders such as *angina pectoris* and cardiac infarction also decreased. Similar reports came from Holland and Germany. In Minnesota and in Leningrad it was found that when diet was increased the blood pressure rose, weight increased and tachycardia and dyspnœa on exertion were noted. Starving people in Europe whose diet was increased after the war showed increase in blood pressure; hypertension occurred more frequently in all age groups, and in Leningrad is said to have been epidemic. Cardio-vascular disease also became much more common. The authors point to these results of increased feeding following semi-starvation as a possibility when restricted diet is used in the treatment of hypertension.

Hepato-Lenticular Degeneration.

H. R. CARTER (*The Journal of Nervous and Mental Disease*, February, 1948) describes four cases of hepato-lenticular degeneration in a family and ascribes therapeutic improvement to a treatment of liver cirrhosis. The diet consists of 300 to 500 grammes of carbohydrates, 200 to 300 grammes of proteins, 50 to 100 grammes of fat, with a total of some 3000 to 4000 Calories per day. It is important that the patient should achieve this total caloric intake as soon as possible. The diet is supplemented by whole unfractionated liver extract three to five millilitres with injections of vitamin *B*-complex two or three times a week; *B*-complex is also taken by the mouth. Methionine and choline, two grammes per day, are used in the belief that they contain certain anticirrhotic properties.

Peptic Ulcer.

E. E. WOLDMAN, D. FISHMAN, R. S. KNOWLTON, A. A. ROUSUCK AND W. C. STONER (*The Journal of the American Medical Association*, August 7, 1948) discuss the evaluation of protein hydrolysate therapy for peptic ulcer. They state that they were unable to support claims made that there is a protein deficiency in patients receiving ordinary ulcer diets. So far as the important neutralization of free acid in the stomach was concerned, doses of 25 grammes of protein hydrolysate every hour failed to neutralize free hydrochloric acid in the stomach. Administration by continuous drip of a 10% solution of protein hydrolysate also failed to neutralize free hydrochloric acid. Ulcer pain was not relieved by protein hydrolysate, but was immediately relieved by aluminium hydroxide gel. Recurrence of peptic ulcer within a short period of treatment was commoner during treatment with protein hydrolysate. The authors consider that this substance has little value as a therapeutic agent for peptic ulcer.

Migraine.

D. MACY AND B. T. HORTON (*The Journal of the American Medical Association*, July 24, 1948) review 144 cases of migraine treated at the Mayo Clinic since 1937. With histamine treatment 23% to 33% of patients showed no improvement irrespective of the route of administration of the drug. Intravenous injection was the least effective. About 60% of patients showed benefit during treatment by subcutaneous injection, and 75% to 100% with combined subcutaneous and intravenous injections, but 85 out of 88 patients experienced a recurrence of migraine when histamine therapy was decreased and stopped.

Pertussis.

J. A. BELL (*The Journal of the American Medical Association*, August 7, 1948) describes the use of two doses of an alum-precipitated mixture of diphtheria toxoid and pertussis vaccine for immunization. Ten billion killed *Hæmophilus pertussis* organisms per dose were injected, with a four-week interval between doses. These doses conferred substantial protection against clinical pertussis when the first dose was given to children at the age of either two to four or five to twenty-three months.

Treatment of Abscesses.

H. J. COHEN (*The Journal of the American Medical Association*, August 21, 1948) describes the treatment of abscesses with aspiration and penicillin. Incision and drainage of abscesses and purulent collections in the body cavities have been modified since the introduction of penicillin. Aspiration of purulent contents and replacement with penicillin solution containing 25,000 units per millilitre have been successfully employed in many cases. It is usual to wait till the abscess is soft. The removal of pus and the injection of an equal amount of penicillin solution leave a fluctuant area which persists for a few days up to a week and then disappears. It is not necessary as a rule to repeat the procedure which the authors found was particularly applicable to infants and children.

Uræmia due to Sodium Depletion.

W. B. MAGUIRE (*The Journal of the American Medical Association*, August 14, 1948) discusses the risk of uræmia due to sodium depletion. He describes three patients suffering from congestive heart failure associated with hypertension and nephritis or pyelonephritis, who developed uræmia when receiving a diet of low sodium content. In each case a diet (a Kempner diet) containing 200 milligrammes of sodium per day was prescribed, and the blood urea level rose steadily to 200 milligrammes *per centum* or thereabouts. When the diet was increased to contain twenty grammes of protein and nine grammes of salt were given, the blood urea level fell considerably. No general improvement was noted of a significant nature, but the author emphasizes the danger of a low sodium intake in such cases.

Treatment of Obesity.

M. GOLDZIEHER (*The American Journal of Digestive Diseases*, September, 1948) discusses the treatment of obesity and refers to the inconsistencies of the caloric and psychogenic interpretation of this complaint. Different treatment is required by patients who over-indulge in food and by those who do not over-eat. The first group requires education and psychotherapy, and, occasionally, help by sedation and amphetamine. The metabolic causes of an increased appetite should be investigated and corrected. If the food intake is not excessive evidence of an endocrine disorder, especially a functional deficiency of the pituitary gland, should be looked for. Treatment is outlined, consisting of moderate dietary restrictions (total caloric restriction with reduction of carbohydrates and fats), the use of thyreoid extract, mild diuretics and pituitary extracts. Evidence for the value of pituitary therapy is reviewed.

Nitrogen Mustard Therapy for Lymphosarcoma and Leuchæmia.

M. M. WINTROBE, C. M. HUGULEY, JUNIOR, M. T. MCLENNAN AND L. P. DE CARVALHO LIMA (*Annals of Internal Medicine*, October, 1947) discuss nitrogen mustard as a therapeutic agent for Hodgkin's disease, lymphosarcoma and leuchæmia. The authors have administered this therapeutic agent intravenously to 77 patients suffering from one or other of these diseases. For those with chronic leuchæmia or Hodgkin's disease who had already responded to nitrogen mustard therapy, maintenance therapy was carried out without admission of the patients to hospital. A salutary effect upon lymph glands, fever, splenomegaly and various clinical symptoms was observed in many patients with Hodgkin's disease, lymphosarcoma and leuchæmia. In general, the effects of nitrogen mustard in those diseases were similar to those produced by X rays. Nitrogen mustard

produced remissions in several patients with Hodgkin's disease who were considered to be X-ray resistant. Nausea and vomiting in great or small degree followed nitrogen mustard administration to most patients. There was usually a decrease in leucocyte count with lymphocytopenia and granulocytopenia, often with a variable decrease in the number of red cells and of platelets, but serious complications did not result. After the initial decrease in blood elements, an increase in red cells even with complete disappearance of anæmia resulted in those patients responding favourably. Leucopenia and thrombocytopenia likewise disappeared. The authors state that nitrogen mustard offers certain advantages as compared with X rays in some cases of Hodgkin's disease and leuchæmia. These include the ease of administration, the effectiveness at times in patients "resistant" to X-ray therapy and, very rarely, a better tolerance for nitrogen mustard than for irradiation. Ultimately, however, nitrogen mustard, like irradiation, has proved ineffective in many cases. The authors conclude that adequate evaluation of the place of nitrogen mustard therapy in the management of "lymphomas" and leuchæmias must await a longer period of observation than has been possible so far, and requires the study of a large number of cases. Experience to date indicates that continued use is justified, and a search for less toxic and more effective agents of this type is warranted.

Penicillin Products.

E. W. THOMAS *et alii* (*The Journal of the American Medical Association*, August 21, 1948) describe studies in the use of a new repository type of penicillin product. Penicillin salts were suspended in peanut oil gelled with aluminium stearates, water repellent substances. Each patient was given 300,000 units of penicillin in repository form, and samples of blood were taken at twelve-hourly intervals up to ninety-six hours. Blood concentrations of 0·03 unit per millilitre or above were recorded according to standard practice. It was found that the absorption of all salts of penicillin tested was delayed longer in peanut oil gel than when the same salts were suspended in peanut oil alone or in peanut oil *plus* wax. Furthermore procaine penicillin in peanut oil gelled with 2% of aluminium monostearate of a small particle size maintained a blood concentration over a much longer period than the same combination with penicillin of large particle size. No abnormal reactions were noted other than the occasional allergic reactions to penicillin among some hundreds of observations.

NEUROLOGY AND PSYCHIATRY.

Prognosis in Mental Disease.

ROBERT H. ISRAEL AND NELSON A. JOHNSON (*The American Journal of Psychiatry*, March, 1948) state that misleading statistics are often issued by mental hospitals and public health authorities. As an example they instance the situation at the Warren State Hospital of 2600 beds. In general only 15% of all patients dealt with will be discharged. Closer examination reveals that 58% of all subjects of first admission will be discharged, and if old age psychoses are excluded the figure rises to 70%. Comparison is made of the discharge rate associated with first admission in 1930-1932 and in 1940-1942. There is a very considerable improvement in the categories of schizophrenia (47% to 60%), syphilis of the central nervous system (16% to 33%), epileptic psychoses (24% to 42%) and involutional psychoses (53% to 70%). In many disease categories there is no great difference during the two periods examined. During these periods the rate of return to hospital within one year after discharge has fallen from 21% to 11%. It is suggested that such figures indicate the valuable work done in psychiatry, and the fact that the patients, their families and friends, the staff of the hospitals and the general public should be made familiar with the true prognoses of the mental diseases.

Value of Electroencephalography.

ROBERT S. SCHWAB (*The Journal of Nervous and Mental Disease*, January, 1948) has analysed the utility of the electroencephalograph. He claims a clinical usefulness of 82% and states that it is in general of value in confirming the absence of brain disease and in confirming the presence of such disease and possibly its location; in 8% of cases it is a critical factor in leading to the correct diagnosis; in 12% it was found to be of no value whatsoever to the clinician, and in half of these cases, namely, 6%, it might have contributed to an erroneous diagnosis. The figures were confirmed by Dr. W. Grey Walter on the basis of 10,000 cases in Bristol.

Finger Capillaries.

ALFRED HAUPTMANN AND ABRAHAM MYERSON (*The Journal of Nervous and Mental Disease*, August, 1948) have studied the capillaries of the finger-nail fold with a microscope. They find that normal individuals have a characteristic pattern which varies with age. Mental defectives have an arrested picture. Schizophrenics have a pattern similar to that of normal children prior to the end state of capillary development. In manic-depressives there is one resembling that of constitutional neurotics who show immaturity. The findings are said to be in keeping with the view that the psychological keynote of schizophrenia is one of immaturity. The authors conclude that they have demonstrated a bodily correlation in the immature capillary picture.

The Mental Hospital.

PRESTON W. THOMAS (*The Journal of Nervous and Mental Disease*, November, 1947) believes that the mental hospital of tomorrow will be shorn of much of its present status. The care of mental patients must be based on three specific ideals: (i) the mental patient must be provided with medical care from the very onset of the illness through the acute stages and until he may be returned to his place in society; (ii) mere custodial care must be completely eliminated and replaced by the principle of constant therapy; (iii) the goal of all treatment must be the return of a maximum number of patients to society in the shortest possible time. Everything must be done to eliminate the stigma of "insanity". The author believes that all psychiatric clinics should be completely removed from mental institutions and psychopathic hospitals. They should be easily available and every community should have access to either a permanent or mobile diagnostic and therapeutic service. Employers, general practitioners, schools and social agencies should be encouraged to refer patients to these clinics for diagnosis and out-patient care. Stay in hospital should be as temporary as possible in view of the fact that the goal of all plans must be the reestablishment of the patient as an adjusted individual outside of an institution. This will require intensive coordination of all public and private agencies.

Electroplexy and Pregnancy.

JOHN L. SIMON (*The Journal of Nervous and Mental Disease*, June, 1948) describes two cases in which electroshock was given to prospective mothers within a month of delivery. Both babies were healthy.

Graphology and Psychology.

E. J. SCHEIMANN (*The Journal of Nervous and Mental Disease*, March, 1948) analyses the flexure or crease lines of the hand in relation to the personality of the individual. He finds that there is some correlation between the hand and the handwriting. Such qualities as egotism, willpower, sensuality, straightforwardness, logic and sensitiveness are associated with alterations in handwriting and this introduces a contraction-release hypothesis. If a person's handwriting is contracted the personality is also contracted. If the handwriting is very released he is lacking in mental control. Diagrams are given showing that there is some correlation between the transverse (flexion) lines and the existence of a rigid or relaxed personality. The author points out that the first expressive movement of an infant, and perhaps the last movement of a dying man, is the gesture of his hand.

Somatopsychic Factors and Anxiety.

ARMANDO FERRARO (*The Journal of Nervous and Mental Disease*, March, 1948) pleads for a greater acceptance of the principle that constitutional factors originating in the soma can result in physiodynamic or structural forces which determine secondary psychogenic dysfunctions; *pari passu* with this a vicious circle is set up by the resulting psychological complications. Cases are given in which either the emotional incident or the somatic state is responsible for the initiation of symptoms. The author urges further investigation of the somatic factor in psychosomatic disease and a better understanding of the principle that it is two-way traffic. The psyche can influence the soma or the soma may influence the psyche.

Cerebral Schistosomiasis.

ROY F. PERKINS AND ALFRED UIHLEIN (*The Journal of Nervous and Mental Disease*, March, 1948) report that during the American invasion of Leyte a considerable amount of schistosomiasis was discovered. Up to 80% of one battalion was infected. Three cases of cerebral schistosomiasis are recorded; in one a cerebral granuloma was removed. The organisms were present in the fæces for which fuadin therapy was successful.

British Medical Association News.

SCIENTIFIC.

A MEETING of the New South Wales Branch of the British Medical Association was held at Saint Vincent's Hospital, Sydney, on October 21, 1948. The meeting took the form of a series of clinical demonstrations by members of the honorary medical staff of the hospital.

Subacute Bacterial Endocarditis.

DR. J. E. SHERWOOD presented a girl, aged seventeen years, who had been admitted to hospital on January 13, 1948, complaining of persistent fatigue since she had "caught a cold" about six weeks previously. She had been very breathless on exertion. Her past history included pneumonia at the age of one year, a "migraine" type of headache, and scarlet fever at the age of nine years, when she was confined to her bed for five months owing to "heart trouble". Her sporting activities had been restricted ever since. Her mother had had rheumatic fever when young. On examination her temperature was 100° F., her pulse rate 140 per minute and her respiratory rate 20 per minute. She appeared obviously ill, with almost a *"café au lait"* complexion. The pulse was regular in time and amplitude. The apex beat of the heart was found in the sixth intercostal space about five inches from the mid-line. A systolic thrill was palpable at the apex. The cardiac dulness appeared to extend slightly to the right of the sternum. A loud systolic murmur was audible at all areas, having its maximum intensity over the mitral area and being audible well out into the axilla and posteriorly in the scapular regions. The blood pressure was 130 millimetres of mercury (systolic) and 80 millimetres (diastolic). No clubbing of fingers, cyanosis or petechiæ could be detected. The tonsillar regions appeared injected. The lungs, abdomen, pupillary reflexes, knee jerks and urine were apparently normal. A culture of *Streptococcus viridans* was grown from the blood. A blood count revealed a moderately severe degree of secondary anæmia with no significant changes in the white cells. The urine contained numerous red cells and very few granular casts.

X-ray examination revealed a cardiac shadow slightly enlarged in its transverse diameter and normal lung fields. An electrocardiogram revealed a flattened *T* wave in Lead IV and evidence of myocardial degeneration. Her stay in hospital was accompanied by further changes. Pyrexia persisted for some weeks. The temperature, pulse rate and sedimentation rate settled down to normal only after many weeks. She received half a million units of penicillin daily for nearly six weeks with subsidiary treatment such as iron for the anæmia. Left renal pain, macroscopic as well as microscopic hæmaturia and infection of the urine with *Bacillus coli communis* occurred. The splenic edge was barely palpable. One "splinter" hæmorrhage occurred under one fingernail. Osler's nodes were noticeable at one period. No clubbing of the fingers or petechial hæmorrhages appeared. She eventually recovered, and her condition to date appeared fairly satisfactory. On October 7, 1948, she was well, free from symptoms, gaining weight and eating and sleeping well. On examination her colour was good; the gain in weight was noticeable. The apex beat of her heart was in the sixth left intercostal space in the nipple line. No thrill was palpable. The heart rate was about 80 per minute and the rhythm regular. A systolic murmur was audible over the precordium, being loud and blowing over all areas, conducted out into the left axilla and propagated over the scapular regions of the chest posteriorly. The second aortic sound was accentuated. The systolic and diastolic blood pressure readings were greater in the left arm and leg than in the right and greater in the legs than the arms. The urine and ocular fundi were normal.

Dr. Sherwood remarked that the pathological sequence of events in her case was presumed to be the development of endocarditis at the age of nine years, with involvement of the mitral and aortic valve cusps due to a rheumatic infection accompanying or closely following on the attack of scarlet fever. The recent affection with *Streptococcus viridans* was more obvious. The rise in the blood pressure readings in the lower limbs made a search for an aortic diastolic murmur more necessary. A watch would be kept in future in that regard. Dr. Sherwood quoted from an article by R. V. Christie on penicillin and subacute bacterial endocarditis in the *British Medical Journal* of January 3, 1948, to which he referred those interested.

Pellagra.

Dr. Sherwood then presented two patients suffering from pellagra which had occurred in civilian life in Sydney. The first patient's condition was of longer duration but milder course and was of the type which could easily wear the label of "neurasthenia". The second patient's condition, of shorter duration, with more obvious symptoms and signs and associated pyrexia, was much more severe. The ætiology in both cases was rather obscure. In the first, domestic worries undoubtedly played a considerable part in the patient's obtaining a deficient diet. In the second, the husband of the patient stated that the patient cooked for everybody else, but did not eat much herself. There was no history of alcoholism in either case and no apparent failure of absorption of food constituents. It would appear that in both cases there was inadequate vitamin intake, or at least an intake inadequate for the patient's needs. In both cases the response to treatment with 500 milligrammes of nicotinic acid daily was rapid and dramatic. Dr. Sherwood said that other cases of pellagra had been noted recently, mostly with fewer symptoms and signs and a lesser degree of severity, which had responded well to treatment. The presence of mental changes, glossitis and pigmentation or dermatitis, in combination, seemed to merit consideration of treatment with nicotinic acid, in the absence of alimentary disturbance from some other cause. It would be noted that a history of diarrhœa was absent in both cases, both patients suffering from constipation rather than diarrhœa.

Auricular Flutter and Hydatid Disease of the Pelvis.

Dr. Sherwood's next patient was a former labourer, aged sixty-five years, who had been admitted to hospital in 1943 suffering from momentary attacks of giddiness on bending or stooping for the past six months. For three months he had had pain in the lower part of the centre of his chest after strenuous exertion; the pain lasted a few seconds only, was not severe, and was relieved by rest; it did not radiate. For six weeks he had had breathlessness on exertion and climbing and for five days a cramp-like pain in the calf of his left leg and also in his left knee joint, which became swollen. Palpitation occurred at night sometimes. A cough had been present for some years. He was a non-smoker and a moderate drinker. On examination the patient was well preserved, with a good colour, slight dyspnœa on exertion in bed and abdomino-thoracic respiration. His chest was emphysematous and scattered rhonci and râles were audible over both lungs. His heart was not clinically enlarged; the rate was 140 per minute, the rhythm was regular and the sounds were distant. No pulse deficiency was present. A large firm cystic mass was palpable in the left iliac fossa; it was not tender. The liver was not palpable and there was no œdema.

The electrocardiogram revealed auricular flutter. On X-ray examination the heart was considerably enlarged both to the left and to the right with broadening of the great vessels; the general appearances suggested hypertension. There was pronounced spondylitis involving all the lumbar vertebræ, and a large soft tissue swelling overlay the left ilium; no evidence of any metastases was found. The patient was given digitalis and fibrillation resulted, but on cessation of the drug, flutter recurred. Quinidine sulphate (three grains) was then given four-hourly by day and night, and normal rhythm resulted in about thirty-six hours. Dr. Kinsella removed a large retroperitoneal hydatid cyst from the region of the left iliac fossa. Post-operative recovery was uneventful. Dr. Sherwood said that he had just recently seen the patient (eight months after operation). The left iliac scar was well healed; the heart rate was 74 per minute, with an occasional extrasystole; he was looking and feeling well.

Acute Myeloid Leuchæmia.

Dr. Sherwood's last patient was a young married woman, aged twenty-eight years, who had complained, when first examined on September 3, 1948, of a sore throat and feeling of exhaustion of two weeks' duration. She had had scarlet fever at the age of ten years and since then had suffered from "kidney trouble" with raised blood pressure, which had necessitated termination of two pregnancies and sterilization; she had one child, delivered by Cæsarean section. On examination she was thin, pale and very ill. The upper cervical glands of both sides of the neck were grossly enlarged. Exudate was present over both tonsillar regions with œdema and a shiny glistening appearance of the uvula and soft palate. Percussion over the left border of the sternum caused pain. No other clinical abnormality

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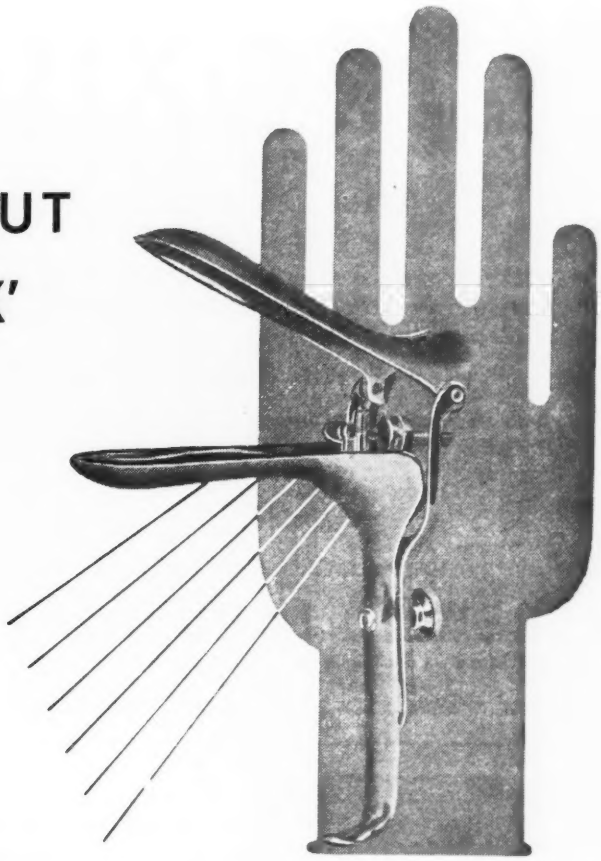

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was found, apart from raised systolic and diastolic blood pressure. A blood count by Dr. E. A. Shipton prior to the patient's admission to hospital revealed 2,610,000 red blood corpuscles per cubic millimetre, a hæmoglobin value of 52% (8·9 grammes *per centum*) and a colour index of 1·0; the white cells numbered 5600 per cubic millimetre, being made up of neutrophile cells 11%, lymphocytes 33% and "blast" cells 56%. Dr. Shipton reported that the blood picture was suggestive of acute leuchæmia, but that that should be confirmed by sternal puncture. A culture of *Streptococcus viridans* and *Staphylococcus albus* was grown from a throat swab. On September 9, 1948, the number of red blood cells had risen to 3,310,000, and the hæmoglobin value to 72%; the white cells numbered 4000 per cubic millimetre, made up of neutrophile cells 2%, lymphocytes 24% and "blast" cells 74%, most of the "blast" cells being "peroxidase positive"; the film was regarded as revealing acute myeloid leuchæmia. On September 23, 1948, the number of red blood cells and the hæmoglobin value had dropped to their original level; the white cell picture was not altered. By October 9, 1948, the proportion of "blast" cells was 80%. The following report was made after sternal puncture by Dr. G. V. Rudd on September 19, 1948.

> The sternal marrow shows a great preponderance of early cells of the myeloid series—myeloblasts, premyelocytes and myelocytes. The myeloblasts show a finely reticular, almost stippled, arrangement of the chromatin, and a basophilic cytoplasm in which granules have not yet appeared. The identification of these cells is aided not only by their occurrence along with increased numbers of premyelocytes and myelocytes, but also by the presence in their cytoplasm of particularly well-defined Auer bodies. These were present also in the primitive cells (myeloblasts) of the peripheral blood. The sternal marrow cytology confirms the earlier diagnosis of myeloblastic leuchæmia.

Dr. Sherwood said that since the patient's admission to hospital her condition had steadily deteriorated. The blood picture had not improved. Temporary subjective and objective improvement had occurred only with the initial administration of penicillin. Blood transfusion was not helpful. Later an attempt had been made to carry out a modified *"ex sanguine"* transfusion, as recommended by Piney in *The Lancet* of September 24, 1948, but owing to the patient's very desperate condition, the outcome proved unsuccessful.

Strictured Œsophagus Replaced by Jejunum.

DR. V. J. KINSELLA presented a female patient, who had had a stricture of the œsophagus extending downwards from the level of the lower border of the aortic arch, due to the swallowing of ammonia. Prolonged trial of treatment with bougies by Dr. Harwood had been unsuccessful. The patient was adequately nourished through a gastrostomy opening, but the collecting of saliva in the proximal part of the œsophagus proved a great discomfort. Operation was carried out in two stages. The first stage (performed on March 11, 1948) was abdominal in approach and the jejunum was divided. The distal segment was closed blindly and after mobilization was placed under the left side of the diaphragm. The proximal segment was implanted end-to-side into the distal. The second stage was carried out five days later through the left side of the thorax. It was not possible to resect the strictured part of the œsophagus, owing to a previous exploration and to the repeated attacks of mediastinitis which had followed attempts at dilatation. So the œsophagus was divided above the stricture and the distal part closed; the proximal part was delivered behind the aortic arch and left subclavian artery and anastomosed end-to-end with the loop of jejunum which was brought up through the diaphragm. Convalescence was satisfactory, except for a transpleural fistula which closed spontaneously. At the time of the meeting the patient was swallowing well and looking forward to the closure of her gastrostomy opening.

Squamous Carcinoma of the Œsophagus.

Dr. Kinsella's second patient, a woman, aged sixty-six years, had had squamous carcinoma of the œsophagus at the junction of the middle and lower thirds. On September 7, 1948, the lower half of the œsophagus was removed, with the lesser curvature of the stomach. Two of the lymph glands removed were large and carcinomatous, one belonging to the œsophageal and one to the left gastric group. The remainder of the stomach was mobilized, drawn up into the thorax and anastomosed to the œsophagus. Convalescence was uneventful and at the time of the meeting the patient was swallowing an ordinary diet.

Carcinoma of the Colon.

The third patient, a man, aged sixty-seven years, was shown with a pathological specimen obtained at operation to illustrate the large size which a carcinoma of the colon could attain, together with an unusual degree of longitudinal spread within the lumen of the bowel. The hepatic flexure was involved together with a considerable length of ascending and transverse colon.

Uncontrollable Hæmatemesis from Extremes of Causes.

Dr. Kinsella then discussed two patients to illustrate uncontrollable hæmatemesis from extremes of causes. One of the patients had had a large gastric ulcer invading the pancreas, with an uncontrollable bleeding erosion of the splenic artery, which suddenly tore, becoming a rupture three to four millimetres long, during induction of local anæsthesia for gastrectomy. The abdomen and stomach were opened, the bleeding was controlled by digital pressure, the artery was under-run by stitches and then the gastrectomy was performed. Rapid massive transfusion contributed to success. The other patient, a woman, aged fifty years, had had hæmatemesis, uncontrollable by medical treatment and transfusions. Gastrectomy was performed on August 18, 1948, and a remarkable increase in the vascularity of the stomach was noted. The patient convalesced smoothly and had no recurrence of hæmorrhage. Dr. Kinsella said that the freshly resected specimen had some tiny fissures in the mucosa; neither those fissures nor any other abnormality could be detected in the formalin-hardened specimen. Microscopic examination had not revealed any abnormality. It was suggested that the diagnosis might be gastrostaxis. Only the specimen was shown at the meeting.

Abdominal Surgery.

DR. V. M. COPPLESON demonstrated, with the assistance of strip film projection, a series of cases illustrating abdominal surgery.

Hiatus Hernia.

The first case was one of hiatus hernia, which was, Dr. Coppleson said, an acquired paraœsophageal diaphragmatic hernia. It caused symptoms which simulated gastro-intestinal disease. The patient, a woman, aged sixty-five years, was admitted to hospital under Dr. R. J. Taylor with a history of having vomited a pint of blood. She had had five previous hæmatemeses and melena on numerous occasions during the previous two years. X-ray examination was reported on by Dr. Anderson Stuart as follows:

> There is a large œsophageal orifice hernia present. There is no evidence of ulceration in the herniated portion, but, in these cases, there is always considerable hypertrophy of the mucous membrane. A superficial erosion could not be excluded. (It is generally considered that a high percentage of these cases have some ulceration present. Some observers place the figure as high as thirty per cent.) There is some irregularity of the duodenal bulb. There is a definite crater present and the ulcer is still active.

At operation, a left upper rectus incision was made and the left triangular ligament of the liver was divided. A tape was passed round the cardio-œsophageal junction. The sac of the hernia was evaginated and removed. The opening in the diaphragm was then repaired with interrupted silk sutures. Some thickening of the head of the pancreas was felt. The patient made an uninterrupted recovery. Dr. Coppleson said that, although a duodenal ulcer was present, her symptoms were relieved and no further hæmatemesis had occurred. An X-ray picture taken two months after the operation showed the stomach to be in its normal position below the diphragm.

Schwannoma of the Stomach.

The second patient also had a history of hæmatemesis. This was found to arise from a large Schwannoma of the stomach. She had been admitted to hospital under the care of Dr. R. J. Taylor with a history of severe hæmatemesis and melena. There was an indefinite swelling present high in the left hypochondrium. Blood transfusions were given. Three days after her admission to hospital her hæmoglobin value was 53%. Later examination of a test meal showed the absence of free hydrochloric acid except for one slight rise at the end of one hour. X-ray examination was reported on by Dr. Anderson Stuart as follows:

> There is a large ulcer crater on the posterior wall of the stomach in its middle third. This has raised indurated margins. There is a strong suggestion of malignant degeneration.

A further X-ray report stated:

> There is some interruption of the normal rugæ of the stomach in its middle third. The appearance suggests an early carcinoma.

At operation a posterior short-loop Hofmeister gastrectomy was performed. Penicillin (100,000 units six-hourly) was given post-operatively. The patient was discharged from hospital on the fourteenth day. When seen three months after operation she had put on weight and had no gastric symptoms.

The report by Dr. L. F. Dodson on the pathological examination of the specimen was as follows:

> The specimen excised consists of duodenum, pylorus and the greater part of the stomach. Arising from the lesser curvature and anterior wall of the stomach is a large tumour six inches in diameter. Part of the tumour projects into the lumen of the stomach. The mucosa overlying it, although showing a few petechial hæmorrhages, is not ulcerated. The greater part of the tumour has grown upwards between the layers of the lesser omentum. The cut surface is coarsely lobulated and in the lesser omentum there are gelatinous and translucent nodules flecked with yellow separated by fibrous septa. At its attachment to the anterior stomach wall, the cut surface is whorled and fleshy. Microscopic examination: the tumour is composed of long plump spindle cells arranged in coarse bundles. In places, there is distinct palisading of the nuclei. The stroma consists of numerous strands of wire-like reticulin fibrils, a few collagenous bands, and in places shows distinctly fatty infiltration. In several areas it is myxomatous. When stained for muscle fibres, the specific reaction was not obtained—gastric Schwannoma.

Pancreatic Calculi.

The third case was one of pancreatic calculus, which was, Dr. Coppleson said, a rare condition. The calculi resembled salivary calculi. Large facetted ones were usually found in the main ducts with multiple smaller ones lodged in the periphery of the gland. The calculi might be clearly demonstrated by X rays. The history was that of an essentially chronic condition, usually extending over ten to twenty years. The patient was a man, aged fifty-eight years. Fourteen years previously he had had a severe "bilious attack" accompanied by a "big feeling in the back". He had no further attacks until three years before coming to hospital, and since then he had had attacks every seven to fourteen days. During the attacks he felt as if his back was "swollen and large", and experienced nausea with vomiting. Examination showed some vague tenderness in the upper part of the abdomen. The calculi were clearly visible in the X-ray film. At operation, several hard movable masses were felt in the pancreas with grating crepitus. The lesser omentum was opened and the main pancreatic duct was incised; pus, debris and two large calculi escaped. A number of smaller calculi were removed from the tail of the pancreas, but the smaller firmly adherent calculi were allowed to remain. The abdomen was closed with one tube. The abdominal wound healed rapidly, but the patient's discharge from hospital was delayed for several weeks by post-operative pulmonary complications.

Reticulo-Sarcoma of the Spleen.

The fourth case was one of reticulo-sarcoma of the spleen. The patient, a woman, aged sixty-six years, was admitted to hospital with a large protuberant mass in the left hypochondrium. Sternal puncture was reported on by Dr. O'Connell as follows:

> There is no qualitative abnormality except perhaps an increase in the lymphocytes showing azure grounds, in either the red or white cell series. Leucogenesis is proceeding normally, but erythrogenesis is depressed, the leucoerythrocytic ratio being 40:1. This is explained possibly by the puncture being made in an area of depressed hæmapoiesis.

A blood count showed the total number of red cells to be 3,950,000 per cubic millimetre; the hæmoglobin value was 86% (11·9 grammes *per centum*) and the colour index 1·01; the white cells numbered 12,000 per cubic millimetre (neutrophile cells 75%, lymphocytes 15%, monocytes 6%, eosinophile cells 3% and basophile cells 1%). The result of the hydatid complement fixation test was negative. Excretion pyelograms carried out by Dr. Wightman showed the kidneys to be of normal size and shape and the left kidney to be displaced downwards by a large tumour mass in the left hypochondrium. Laparotomy revealed an enormous spleen, cystic and adherent to the diaphragm, liver and adjacent organs. The cystic contents, a whitish fluid, were aspirated, and were found to be sterile. The spleen was then removed and the abdomen was closed, with a tube in the left flank. Two litres of blood were given during operation, and penicillin 100,000 units six-hourly after operation. The patient was allowed up on the tenth day and was discharged from hospital on the fourteenth. Pathological examination of the spleen showed the presence of a reticulo-sarcoma.

Duodenal Diverticulum.

The fifth case was one of bilobed diverticulum of the duodenum. Dr. Coppleson pointed out that duodenal diverticula, although congenital in origin, did not usually cause symptoms until late in life. As in the case under consideration, ectopic pancreatic tissue was often found attached to the diverticulum. Most duodenal diverticula occurred on the concave side of the duodenum; in the present case the diverticulum was on the convex side. The patient was a male, aged twenty-four years, who was admitted to hospital complaining of attacks of a heavy feeling coming on after meals and lasting a few hours, and a tender spot in the epigastrium. An X-ray examination by Dr. Donald Copping, of Perth, showed a diverticulum of the second part of the duodenum. The diverticulum presented an unusual bilobed appearance instead of the usual spherical form. At operation, a bilobed sac was found at the lower right aspect of the second part of the duodenum at the junction of the lateral and posterior walls. It was dissected free, tied off and removed, and the area was oversewn. A triangular layer of pancreatic tissue passed in front of the duodenum to the diverticulum. Penicillin was given post-operatively, recovery was uneventful and the patient was discharged from hospital on the fourteenth day. Relief following the operation had been complete.

Obstruction of the Small Intestine by a Gall-Stone.

The sixth case was one of obstruction of the small intestine by a gall-stone. Dr. Coppleson explained that in such cases the gall-stone ulcerated from the gall-bladder into the duodenum and obstructed the small bowel about eighteen inches from the ileo-caecal valve. The patient was a woman, aged seventy years, who was admitted to hospital with recurring episodes of acute intestinal obstruction characteristic of the condition. Diagnosis was ade before operation, and the calculus was clearly demonstrated in a plain X-ray film of the abdomen. At operation, the calculus was milked back along the small intestine and removed through a small incision. Two hundred thousand units of penicillin were placed in the abdominal cavity. Recovery was uneventful.

Total Colectomy for Ulcerative Colitis.

The next case was one of total colectomy performed on a patient with ulcerative colitis. The patient, a woman, aged forty-four years, had suffered for over nine years. On admission to hospital, she had both an ileostomy and a transverse colostomy. In addition to a constant discharge from both those openings, she incessantly passed fluid fæces *per rectum* and was in great distress. She was thin, weak and utterly miserable. Through a transverse incision, small and large bowel were removed from the ileostomy and including the transverse colostomy to low in the pelvic colon. Penicillin was introduced into the peritoneal cavity at operation and was also given by injection after operation. A wound abscess occurred, but gave no great trouble. The pathological report by Dr. Dodson on the colon removed was as follows:

> The colonic mucosa is injected in places. It is flattened and atrophic, elsewhere granular and slightly polypoid. Microscopic examination shows a marked fibrosis of the sub-mucosa, which is infiltrated by small round cells (plasma cells and lymphocytes). The mucosa is eroded completely in places, elsewhere it is flattened and there is marked inflammatory infiltration.

At the time of the meeting the patient had put on four stone in weight. A paste of powdered aluminium one part and zinc cream two parts was used to protect the skin around the ileostomy opening. Arrangements were being made for her to obtain a suitable apparatus to wear. The patient was shown, not to demonstrate any good effects of ileostomy, which it was thought should be avoided, if at all possible, but to show the dramatic effect of colectomy in an almost hopeless case. The ileostomy was permanent and junction with the remaining portion of the large bowel was not contemplated, as that portion of the bowel had been so seriously affected by the disease, of which it still showed unhealed signs.

Polypus of the Sigmoid Colon.

The next case was one of polypus of the sigmoid colon which had been removed locally by colotomy. The patient was a woman, aged fifty-eight years, who had been referred by Dr. J. D. F. O'Keefe, of Cooma. She had complained of rectal pain, hæmorrhage, diarrhœa and a feeling of inability to empty the rectum for eight years. Some years previously at another hospital she had had a transverse colostomy performed. A laparotomy was then carried out, but apparently nothing was found and the colostomy opening was closed. Her symptoms continued. X-ray examination after admission to hospital and also examination by speculum and digital examination revealed no abnormality. Sigmoidoscopic examination revealed a long finger-like polypus with an excoriated distal end lying above the recto-sigmoidal junction. At operation the polypus was felt in the lumen of the sigmoid colon. The bowel was opened, the polypus with its base was removed and the bowel was closed. Recovery was uneventful, and the patient was discharged from hospital free of all symptoms sixteen days after the operation. The pathological report was as follows:

> The polyp is about an inch in diameter with a stalk lacking epithelium. The epithelium is hyperplastic, many cells showing no mucous production; many cells are darkly staining. No invasion of the stalk is seen. The tumour shows more activity than one likes in these cases, but it is not regarded as malignant.

Diffuse Polyposis of the Rectum.

The next case was one of diffuse polyposis of the rectum. The patient was a man, aged fifty-nine years, who had been referred by Dr. Fenner, of Balmain, complaining of rectal hæmorrhage for fourteen years and of the fact that for the previous six months the bowel came down about four inches during defæcation. On examination, a large polypoid mass was seen and felt low in the rectum. The patient was first seen in 1945. He was admitted to hospital and as much as possible of the affected area was removed through the anal canal. Towards the end of 1947 he returned with recurrence of his symptoms, and it was decided to remove the whole of the affected area by abdomino-perineal resection. That was done. At the time of the meeting the patient was well and had little inconvenience. The pathological report by Dr. Dodson on the specimen removed was as follows:

> Immediately above the anal canal, there is a mass with a sessile base and a coarsely papillary surface. The tumour fills the rectum and its base covers most of the rectal circumference. Microscopic examination: papilloma of the rectum (benign).

Abdomino-Perineal Resection of the Rectum.

Dr. Coppleson then discussed a series of six cases to show the effects of new techniques in abdomino-perineal resection of the rectum for carcinoma, which gave a wider range of operability in nearly 90% of cases; they gave greatly improved results and a lowered mortality and morbidity rate. He said that most rectal growths were regarded as operable unless firmly fixed laterally. The patient's wounds were usually healed in fourteen days and he was discharged from hospital in from three to four weeks. The chief points in the method were thorough pre-operative preparation over at least a week, combined with the use of sulphonamides and penicillin; the use of premedication and heavy procaine spinal anæsthesia only for anæsthesia; blood transfusion during operation; careful hæmostasis from above; care in suture of the pelvic peritoneum; closed colostomy through the upper angle of the wound; high lithotomy position for the perineal stage of the operation; no removal of the coccyx; no packing of the perineal wound, but insertion of one drainage tube only; post-operatively, the injection of penicillin 100,000 units six-hourly. The colostomy was opened in twenty-four hours; the perineal tube and usually the indwelling catheter were removed within about eight days. About the eighth to tenth day, the colostomy opening was trimmed flat with the abdominal wall. The wound had usually healed in fourteen days. Dr. Coppleson showed the apparatus used at the hospital, which consisted of a concave, almost flat piece of aluminium, kept in place by elastic straps. He said that the patient was advised to keep himself constipated and to wash out the colostomy opening several nights a week. Improved methods had removed most of the terrors of the operation and the patients shown suffered little inconvenience from their colostomies. They were able to continue their ordinary work like normal persons and to maintain normal social contacts. They were also able to go swimming and to play tennis.

Medical Societies.

THE MEDICAL SCIENCES CLUB OF SOUTH AUSTRALIA.

A meeting of the Medical Sciences Club of South Australia was held on October 1, 1948, at the Institute of Medical and Veterinary Science, Adelaide.

B.C.G. Vaccination in Adelaide.

A discussion on B.C.G. vaccination in Adelaide was held.

Preparation, Standardization and Use of B.C.G. Vaccine in Humans.

MISS C. ERICA PAGE said that B.C.G. (*Bacille Calmette-Guérin*) vaccine consisted of living organisms used for increasing resistance against primary tuberculous infection. The vaccine was freshly prepared and administered in a special laboratory every two weeks. In its preparation, young cultures of B.C.G. on a solid egg-yolk, glycerin and agar medium were used, and the vaccine was standardized by dry weight. Prior to the use of B.C.G. in humans, virulence and protection tests were carried out in guinea-pigs with satisfactory results. Human vaccinations were performed by the percutaneous multiple puncture method, by means of a special gun producing forty simultaneous punctures in a regular pattern. All subjects for vaccination must have failed to react to the Mantoux test with 1/1000 old tuberculin within one month prior to the injection. Miss Page went on to say that since February, 1948, 811 persons, including medical students, nurses, members of tuberculous households and others, had been vaccinated. The first two groups were inoculated with vaccine standardized to contain respectively 0·5 milligramme and 2·0 milligrammes dry weight per millilitre of distilled water; but the reactions at the site of vaccination were poor, and the responses to the Mantoux test either remained negative or were weakly positive only. The concentration proving most satisfactory was five milligrammes dry weight per millilitre. Of 741 persons injected with vaccine of that strength, 368 had so far been retested with 1/1000 old tuberculin, and the response to the Mantoux test of only two had remained negative.

Report on Attempts to Preserve B.C.G. Vaccine.

MISS G. DAWN ALLEN said that freezing, desiccation with exclusion of oxygen or the modern method of freeze-drying had been applied successfully in the preservation of various microorganisms. Attempts had been made to preserve B.C.G. vaccine along those lines. Vaccine had been dried *in vacuo* from the frozen state by means of Flosdorf and Mudd's apparatus for the "Cryochem" process. Cultural tests were performed on vaccine freeze-dried from distilled water, peptone (10%) and ox serum (50%). In the process of drying, each product showed the same decrease in the number of living B.C.G. organisms, but for at least one month after being dried the numbers of living bacilli in the dried vaccine remained the same. Vaccine was now being dried from distilled water, lactose (5%), peptone (10%) and human serum (5%). Previous experiments had indicated that B.C.G. vaccine stored at 4° C. remained effective, so small quantities were being kept as a liquid at 4° C. and also as a frozen vaccine. The vaccine preserved in those three ways was to be tested culturally by guinea-pig vaccination and by human inoculation.

The Metabolism of Acetaldehyde by Yeasts.

MR. J. C. M. FORNACHON said that acetaldehyde, which was the precursor of ethyl alcohol in the fermentation of hexoses by yeasts, was again formed by the dehydrogenation of alcohol during a later stage of development (the film stage) of some yeasts. Experiments with suspensions of washed yeast cells had shown that the ability to form aldehyde from alcohol was common to several species of yeasts, but that the sherry flor yeasts formed greater amounts of aldehyde than did other yeasts tested. The chief requirements for aldehyde accumulation in suspensions of yeast cells were found to be a relatively high concentration of alcohol and abundant oxygen. In the absence of alcohol, added aldehyde was consumed by the yeasts under both aerobic and anaerobic conditions. In the presence of alcohol, added aldehyde was consumed under anaerobic conditions; but under aerobic conditions the aldehyde content of the suspension approached an equilibrium value, which depended on the concentration of alcohol, the presence of other carbon compounds and probably other factors. During the growth of sherry flor yeast as a film on wine the course of aldehyde

accumulation varied according to several factors. Temperature had been found to affect the variations in the aldehyde content of such wine, and it was suggested that temperature and possibly other factors, which influenced the vigour of film growth, affected the course of aldehyde accumulation by influencing the supply of oxygen to the cells in the film.

A meeting of the Medical Sciences Club of South Australia was held on November 5, 1948, at the Institute of Medical and Veterinary Science, Adelaide.

Some Aspects of Carbohydrate Metabolism in the Young Ruminant.

MR. I. JARRETT presented a short account of the physiology of the ruminant in relation to its carbohydrate and fat metabolism. The fact that those animals relied mainly on the lower volatile fatty acids (acetic, propionic and butyric) for their energy requirements lent support to the possibility that their carbohydrate metabolism might be of subsidiary importance. Some work carried out at the Division of Biochemistry of the Council for Scientific and Industrial Research was then discussed, and it was shown that a young lamb when born had a concentration of total reducing sugar in the blood of about twice the adult level. The added sugar was shown to be fructose, so that about 40 milligrammes of fructose per 100 millilitres of blood were present at birth. The fructose soon disappeared, and after three or four hours the blood sugar level was about 50 milligrammes per 100 millilitres. After the lamb had sucked, the level of sugar in the blood rose to about 120 milligrammes per 100 millilitres; it was maintained at that figure for about three weeks, after which it slowly fell to the adult level of 50 milligrammes per 100 millilitres by the sixth or seventh week after birth. During that period no fructose was detected. Some possible implications of these observations were discussed.

Naval, Military and Air Force.

APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Numbers 10 and 16, of January 27 and February 17, 1949.

NAVAL FORCES OF THE COMMONWEALTH.

Permanent Naval Forces of the Commonwealth (Sea-Going Forces).

Robert Michael Coplans is appointed Surgeon Lieutenant-Commander (for short service), with seniority in rank of 1st September, 1947. Dated 15th November, 1948.

Appointment.—Surgeon Commander Thomas Frank Miles is appointed on loan from the Royal Navy, with seniority in rank of 26th November, 1945, dated 11th October, 1948.

Citizen Naval Forces of the Commonwealth.

Royal Australian Naval Reserve.

Termination of Appointment.—The appointment of Peter John Falconer Grant as Surgeon Lieutenant is terminated, dated 12th January, 1949.

Royal Australian Naval Volunteer Reserve.

Promotion.—Surgeon Lieutenant Edward Winston Preshney is promoted to the rank of Surgeon Lieutenant-Commander, dated 12th December, 1948.—(Ex. Min. No. 6—Approved 9th February, 1949.)

ROYAL AUSTRALIAN AIR FORCE.

Permanent Air Force: Medical Branch.

William Lockhart Rait, M.Sc., M.B., B.S. (257764), is appointed to a short-service commission on probation for a period of twelve months, 1st December, 1948, with the rank of Flight Lieutenant.

Flight Lieutenant (Temporary Wing Commander) C. J. N. Leleu, O.B.E., M.B., B.S., O.T.M. and H. (1176), is transferred from the Citizen Air Force and appointed to a permanent commission, 23rd September, 1948, and promoted to the rank of Wing Commander, 23rd September, 1948. His name is to appear in the Air Force List issued by the authority of the Air Board next after the name of Wing Commander H. J. Melville, M.B., Ch.B. (1171), and before the names of Wing Commander G. C. V. Thompson, M.B., B.S., F.R.C.S. (Edin.) (252836), and he is to take seniority in the Royal Australian Air Force accordingly; and his pay, allowances and any incremental pay shall be for the rank of Wing Commander having regard to his previous service.

Citizen Air Force: Medical Branch.

The appointment of Temporary Squadron Leader A. H. Toyne (267719) is terminated on demobilization, 4th January, 1949.

The appointment of Temporary Squadron Leader N. A. Albiston (257550) is terminated on cessation of part-time duties, 31st December, 1948.

Reserve: Medical Branch.

Norman Arthur Albiston (257550) is appointed to a commission with the temporary rank of Squadron Leader, 1st January, 1949.

Former Flight Lieutenant Douglas Britton Pearce (257111) is appointed to a commission with the rank of Flight Lieutenant, 20th September, 1948.

Post-Graduate Work.

THE MELBOURNE PERMANENT POST-GRADUATE COMMITTEE.

PROGRAMME FOR MARCH.

Demonstration at Flinders Naval Depot.

THE demonstration at Flinders Naval Depot by Dr. Eric Price, which was to have been held on Wednesday, March 9, 1949, has been postponed until Wednesday, March 23, 1949, at 2.30 p.m.

Obituary.

KEITH McKEDDIE DOIG.

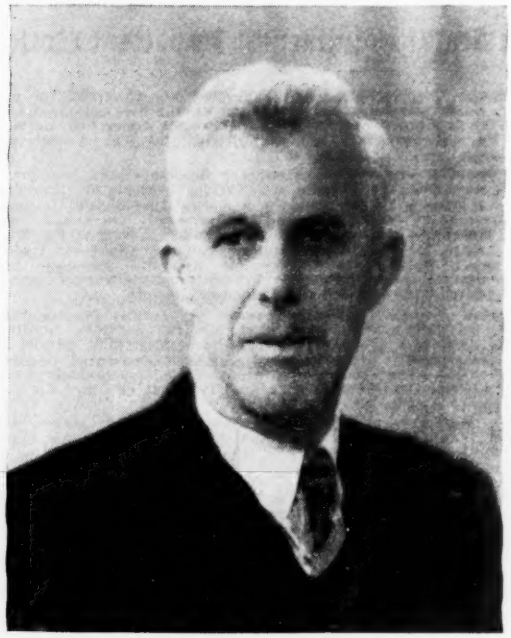
WE are indebted to Dr. Arthur E. Brown for the following appreciation of the late Dr. Keith McKeddie Doig.

Keith McKeddie Doig, of Colac, Victoria, died at Lorne on January 3, 1949, three months after the onset of severe illness while he was at work. He was born fifty-seven years ago at Nathalia, where his father was a schoolmaster. He entered Geelong College on a scholarship and left his mark on the college life, both in athletics and in work, becoming *dux* of the school the year he left to pass into Ormond College of the University of Melbourne. Here again he left the impress of his personality, both in scholarship and in athletics, and he took a leading place in the organized social life of the college. He remained an enthusiastic member of the old students' associations of both school and college for the rest of his life. After a brilliant medical course he qualified in 1914. In 1915 he entered the Australian Army Medical Corps, his major war service being as medical officer to the 60th Battalion, in which he formed many lasting friendships; later he was posted to Number 1 Australian General Hospital at Rouen, where he shortly became registrar and continued his genius for making lasting friendships. His health suffered badly under the strain of his battalion life, but he returned and took up general practice in Colac in partnership with me in March, 1920. About the same time he married Miss Lewis Maffra Grant. His married life, as well as his professional life, was extremely happy. He had four children, two of whom, Dr. R. K. Doig and Dr. W. G. Doig, followed him in his profession. Professionally he made himself greatly loved by the people among whom he worked, and on the day of his funeral the streets were lined by men, women and children, of whom all had had some cause to be grateful for his life among them. His interest lay on the medical side of his work, and he became a Member of the Royal Australasian College of Physicians in 1942.

Keith Doig was one of those medical men whose impact on his fellows has always been strong and lasting. Wherever one went one met men who remembered him, whether from boyhood days at Nathalia, school days at Geelong College, university days at Ormonde College, or those days of the first World War when he made himself so much loved by his

colleagues of the 60th Battalion. I have found, when travelling in any State in Australia, from Queensland to Western Australia, that I would be certain to meet somewhere men of his own age who would eagerly claim acquantance with him and speak of their memories of him with appreciation and affection. Even one afternoon when I was in the theatre at the Middlesex Hospital in London, some ten years ago, an entirely unknown man, hearing Victoria mentioned in conversation, asked me did I know Keith Doig, and proceeded to speak of him in the same manner. And it is an experience that few of us can claim that, ever since the war days, both his personal batman and his medical sergeant kept up with him an uninterrupted Christmas exchange of letters, while the former travelled a long distance to attend his funeral.

Such a man must inevitably find the responsibilities of practice weigh on him by reason of the closeness of his human contacts. It may illustrate what his work meant to him when I relate that, one one occasion not so very long ago, it was semi-officially suggested to him that, if he would only concentrate entirely on his medical work, he



would be welcomed as a Fellow of the Royal Australasian College of Physicians, of his membership of which he was very proud. His comment to me when we discussed it was: "Of course I should love to be a Fellow, but how could I turn down my mids.?" Such men die early, as he did. The human coronary blood supply has its limits, and it can only sustain a certain amount of concentrated responsibility. But one such man who dies untimely is better for the world than many of us others who cannot achieve his high standards, and so live longer.

Dr. Archie S. Anderson writes: From time to time in our profession, as in other walks of life, there occur individuals of such strength of character and warm humanity that our highest ideals are, for them, but the ordinary rules of everyday conduct. During their lifetime we less vertebrate ones find refuge in the shelter of their companionship. After death their memory steels our courage when the *"descensus Averno"* becomes perilously *"facilis"*. They are the Mr. Standfasts of our Pilgrim way, and it is they that we must seek to emulate if we are to save our souls alive even in the Slough of Nationalization. They are to be found, not only among the specialists and acknowledged leaders of the profession, but, probably in greater number, among the great body of general practitioners. Arthur Wilson and John Green are examples of the former, Keith Doig of the latter.

It is hard to realize that "Keddie" Doig is dead. To those of us privileged to be his fellow students in Ormond College, his name must ever recall virility, energy and leadership. On the oval he was the dynamic and inspiration of the many teams he led with such conspicuous success. In the classroom and ward his keenness and common sense were a constant stimulus to his fellows. In the social and community life of the college his was the controlling mind, shaping college policy and encouraging others to accept and support his own wholesome standards of life. He was the leader, always the leader. Never before have I met, never again do I expect to meet, one so born to lead. But "Keddie" was no "stern, strong, silent man". To see him, one of a group round a study fire, resting on his shoulder-blades, his feet on the mantelpiece, industriously blowing smoke-rings at the ceiling, was to experience something of his simple-hearted good-fellowship, the sharing of which was the rich treasure of his friends. And, in later years, to meet him in his home amidst his family was to see "Keddie" at his most lovable best. It is hard to think of him as dead. It is wrong to do so, for, even for those who cannot accept the Christian hope, "the whole earth is the tomb of brave men and their story is not graven only on stone over their clay, but abides everywhere, without visible symbol, woven into the stuff of other men's lives", and the spirit of "Keddie" still lives: in the lives of his team mates, for whom he will ever be the beloved captain; in the minds of his colleagues, for whom he clothed their highest ideals in the rich humanity of his example; and in the hearts of his friends, for whom he will always be an imperishable memory. This is the rich heritage he leaves to his family, and this it is which will sustain them even in their deep sorrow.

CLIVE SIPPE.

We are indebted to Dr. John Bostock and Dr. L. J. J. Nye for the following appreciation of the late Dr. Clive Sippe.

Clive Sippe, or "Bish" as he was known to his school friends, was a pupil at the Trinity Grammar School, Sydney. It was always his objective to become a physician, and after matriculation (he topped the State in geology in the Leaving Certificate examination) he entered the faculty of medicine in the University of Sydney in 1920 at the age of seventeen years. He graduated with honours in 1926 and became a junior and, later, senior resident medical officer at Sydney Hospital. In 1928 he went to England as assistant surgeon on the *Orama*. In his post-graduate studies there he became interested chiefly in heart and chest work and was admitted as a Member of the Royal College of Physicians of London two years later. Returning to Australia in 1930 he joined the staff of the newly formed Brisbane Clinic and became physician to out-patients at the Brisbane Hospital. After the formation of the Royal Australasian College of Physicians he became a Member, and in 1947 he was elected as a Fellow. At the Brisbane Hospital the quality of his work and his reliability gained for him an appointment as a visiting physician to in-patients in 1938.

His students and medical colleagues remember him for his dialectic teaching. He was persistently asking how symptoms arose and would not be satisfied with approximate answers. He thus acquired a sound knowledge of medicine, and his opinion as a consultant was highly regarded. In the study circle to which he belonged he was regarded as an authority on hearts, chests and allergy. He had qualities of a researcher of no mean order and will be remembered chiefly for his work on the blood bromides and the ramifications of hypoglycæmia, for which he received overseas recognition. In this he was assisted by his location in the subtropics, since this predisposes to the hypoglycæmic state. Early in his career he recognized the importance of psychosomatic medicine, and in his treatments full consideration was given to the psychological factors. His handling of a case was helped by his honesty and friendliness to the patient. For this reason his loss will be felt by a large number who regarded him as their physician and personal friend.

It must not be thought that Clive Sippe was merely an intellectual bluestocking. He cultivated a wide variety of interests. A keen fisherman, he could throw a line with the best, he was an enthusiastic gardener, and he enjoyed seeing thoroughbreds in action on the racecourse. He was also a good churchman.

During the latter years and particularly after his war experiences in the Middle East and on the hospital ship *Manunda* (he was wounded when it was bombed at Darwin) there were days and weeks of constant pain. It was rarely that he did not continue to carry out his full duties, yet, at times, he was suffering so much that his colleagues wondered how it was possible for him to do so. He was an example of great courage in his determination to keep on keeping on. He leaves a wife and two young children, to whom is extended the sympathy of his many friends and colleagues.

The following is a list of some of his publications in THE MEDICAL JOURNAL OF AUSTRALIA.

"The Median Pressure and Hypertension Moyenne Solitaire Syndrome: Some New Aspects of Oscillometry", October 1, 1932 (with C. Shellshear).
"Some Observations of Bromide Therapy and Intoxication", January 18, 1932 (with J. Bostock).
"Hypoglycæmia: A Survey and Account of Twenty-Five Cases", February 18, 1933 (with J. Bostock).
"A Consideration of Achlorhydria: Review of 100 Cases", February 6, 1932 (with L. J. J. Nye).
"Hypoglycæmic Angina", September 2, 1933.
"Hypoglycæmia and Ketosis: Their Relationship to Antral Disease and Bronchiectasis", May 26, 1934.
"The Dangers of Indiscriminate Alkali Therapy", April 20, 1935.
"A Case of Undescended Testes Successfully Treated with Antuitrin S", February 1, 1936.
"Diet and Disease in Later Life", February 1, 1936.
"Gastro-Intestinal Symptoms of Hypoglycæmia", July 31, 1937.
"Migraine from the Allergic Viewpoint: Results of Treatment in 105 Cases", May 21, 1938.

The Royal Australasian College of Physicians.

SIMS COMMONWEALTH TRAVELLING PROFESSOR, 1949.

PROFESSOR G. W. PICKERING, Sims Commonwealth Travelling Professor for 1949, will deliver the following lectures in the Public Health Theatre of the University of Melbourne at 8.30 p.m.: Friday, March 25, 1949: "Hypertension" (Lecture 1); Tuesday, March 29, 1949: "Hypertension" (Lecture 2); Thursday, March 31, 1949: "The Ætiology of Constrictive Pericarditis".

Professor Pickering will deliver the following lectures in the Library of the Royal Society of Tasmania, Hobart, at 8 p.m.: Monday, April 11, 1949: "Angina Pectoris and Intermittent Claudication"; Tuesday, April 12, 1949: "Headache".

All members of the medical profession are invited to attend.

Royal Australasian College of Surgeons.

A MEETING open to Fellows of the Royal Australasian College of Surgeons and to all members of the medical profession will be held at 8.15 p.m., Wednesday, March 30, 1949, in the Stawell Hall of the Royal Australasian College of Physicians, 145 Macquarie Street, Sydney. Dr. B. T. Edye and Dr. K. W. Starr will speak on "Failures and Disappointments in Gall-Bladder Surgery". The discussion will be opened by Dr. H. R. G. Poate.

Australian Medical Board Proceedings.

QUEENSLAND.

THE undermentioned have been registered, pursuant to the provisions of the *Medical Acts, 1939 to 1948*, of Queensland, as duly qualified medical practitioners.

Robin, Philip Bryan, M.B., B.S., 1948 (Univ. Queensland), Lambert Street, Kangaroo Point, Brisbane.
Fullagar, John Kelsham, M.B., B.S., 1946 (Univ. Melbourne), Hospitals Board, Rockhampton.
Gayst, Henry, M.B., B.S., 1944 (Univ. Sydney), c.o. Women's Hospital, Crown Street, Sydney.
Robertson, Peter McIntosh, M.B., B.S., 1947 (Univ. Melbourne), c.o. Aerial Medical Service, Cloncurry.
Bellilovsky, Benjamin, L.R.C.P. and S., 1920 (Edinburgh), L.R.F.P. and S., 1920 (Glasgow), "Innisfail", Wickham Terrace, Brisbane.
Shea, Frederick William, M.B., B.S., 1948 (Univ. Melbourne), c.o. Mater Misericordiæ Hospital, South Brisbane.
Tighe, Hugh James, M.B., B.S., 1948 (Univ. Melbourne), c.o. Mater Misericordiæ Hospital, South Brisbane.
Bestic, Arthur Edwin, M.B., B.S., 1944 (Univ. Sydney), 34 Karranga Avenue, Killara, Sydney.
Reeve, Thomas Smith, M.B., B.S., 1947 (Univ. Sydney), District Hospital, Collinsville.

The following additional qualifications have been registered:

Leggett, Clarence Arthur Campbell, Brisbane Clinic, Wickham Terrace, Brisbane, M.S. (Univ. Queensland), F.R.A.C.S., 1946.
Ryan, Dermot Clark, Wickham Terrace, Brisbane, D.C.H., R.C.P. and S. (London), 1948.

Diary for the Month.

MARCH 23.—Victorian Branch, B.M.A.: Council Meeting.
MARCH 24.—New South Wales Branch, B.M.A.: Clinical Meeting.
MARCH 25.—Queensland Branch, B.M.A.: Council Meeting.
MARCH 29.—New South Wales Branch, B.M.A.: Council Quarterly.
MARCH 31.—New South Wales Branch, B.M.A.: Annual Meeting.
MARCH 31.—South Australian Branch, B.M.A.: Clinical Meeting.
APRIL 1.—Queensland Branch, B.M.A.: Branch Meeting.
APRIL 5.—New South Wales Branch, B.M.A.: Council Meeting.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia. All government appointments with the exception of those of the Department of Public Health.

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